

Thomas (T. G.)

NOTES

FROM LECTURES

ON

OBSTETRICS

BY

T. G. THOMAS, M. D.

(PRINTED FOR DR. WINTERS' QUIZ CLASS, BY PERMISSION
OF PROF. THOMAS.)

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Notes on Obstetrics.

PART FIRST.

SECTION FIRST.

ORGANS OF REPRODUCTION.

1st, EXTERNAL; 2d, INTERNAL. (THE HYMEN SEPARATES THE TWO.)

1st. EXTERNAL ORGANS.

Those seen by separating the thighs. They are the *Mons Veneris*, *Labia Majora*, *Labia Minora*, *Vestibule*, *Clitoris*, *Meatus Urinarius*, *Fourchette*, and *Bulb of Vagina*.

(a) *Mons Veneris*—Consists of areolar and adipose tissue, and skin, the latter covered with hair. It affords protection to symphysis. Tyler Smith's opinion, "that the hair indicates the fecundity of the woman," I find untrue.

(b) *Labia Majora*—Extend from the mons veneris to the perineum; are very elastic, and contain small sacks, called dartoid sacs, being similar in construction to the dartos in the male, which begins at the external abdominal ring. In these sacs pudental hernia may occur, similar to inguinal hernia in the male. Their surface secretes a thick offensive mucus. It is the analogue to the scrotum in the male.

(c) *Labia Minora*—Run up to clitoris, one portion running over and forming prepuce, the other portion running under it and forming the frenum. It corresponds to the corpus spongiosum in the male. The labia minora may be affected by *masturbation* in a similar manner to the penis.

(d) *Vestibule*—Is a small triangular space, two fingers breadth in size, reaching from the clitoris to the meatus urinarius. To find the meatus, take a female catheter and place one finger upon its end, and touching the clitoris pass down in the mesial line, to the orifice of the vagina.

(e) *Clitoris*—The organ of touch of the “aphrodisial sense” (Meigs), is a small body, about one-quarter of an inch long, and is liable to erection, and is sometimes removed to cure masturbation.

(f) *Meatus Urinarius*—Is the external orifice of the *Urethra*.

(g) *Fourchette*—Is the point of junction of labia; and its only point of importance is its liability to rupture in first labors, which always occurs, according to Dewes and myself.

(h) *Bulb of Vagina*—Opening of the vaginal orifice—the fourchette below it resembling the digital web.

PERINEUM.

This consists of muscles covered by adipose tissue and skin. It should not be ruptured in parturition. Its muscles are:

1st. *Constrictor Vagina*, a double muscle passing over the clitoris, compressing the vena dorsalis clitoris, and causing erection of the clitoris.

2d. *Erector Clitoris*.

3d. *Transversus Perinei*, a double muscle.

4th. *Compressor Urethrae*, a double muscle.

5th. *Levator Ani*, a double muscle.

6th. *Sphincter Ani*, a double muscle.

7th. *Coccygeus*, a double muscle.

8th. *Sacro-Coccygeus Anticus*.

In many cases the perineum is ruptured during labor, the sphincter ani are widely separated, and their point of contact broken. The transversus perinei muscles draw aside the vaginal muscles from each other, and, as a consequence, the uterus prolapses; as the vagina is supported below by the perineum, and above by the symphysis, when the parts are in their normal positions.

HYMEN

Consists of two layers of mucous membrane, separating the external from the internal organs of generation. The layers are continuous with the mucous membrane of the vagina, and simply pass upward and outward. The shape varies, being generally crescentic, but sometimes is tongue-shaped, perforated, &c. Coition may take place without a rupture of the hymen, and want of hymen does not imply lack of chastity. Many women are born without one. Many rupture it accidentally. Women ride upon a side-saddle to preserve this membrane. Formerly women without hymens were killed.

DISEASES OF HYMEN.

It sometimes undergoes calcareous degeneration, in which case surgical aid may be required to rupture. The constrictor vaginae muscles sometimes produce an irritable condition (vaginismus), which is due to spasm or inordinately stretched vagina. When the hymen is ruptured the remains lie across the vagina, and are termed *carunculae myrtiformes*. These sometimes give rise to leucorrhœa.

GLANDS.

1st. MUCIPAROUS; 2d, SEBACEOUS; 3d, AGMINATI.

1st. *Muciparous* are found in vestibule, labia majora and minora.

2d. *Sebaceous* are found between labia majora and minora.

3d. *Agminati* are also called "vulvo-vaginal," or "Bartholine glands" or "glands of Huguier," and are situated beneath the perineal muscles. Their ducts run forward, and open in front of the hymen. They are about the size of almonds. They secrete an unctuous material which serves to lubricate the parts during coition. The want of this secretion prevents sexual emotion, constituting the so-called "mulieres frigidae."

OEDEMA LABIORUM.

During last two months of pregnancy the labia majora become so large as to prevent closure of the thighs. Excessive enlargement of the veins that form the "Pars Intermedia" and bulb of the vestibule causes this swelling. Thrombus from the blood being poured out into the tissue, or rupture, and hemorrhage externally, may occur during defecation, &c.

2d, INTERNAL ORGANS.

These are Vagina, Uterus, Fallopian, Tubes, and Ovaries.

(a) *Vagina*—Is supported by *perineum*. It has three coats. The internal coat is mucous, which passes up, lining the uterus and Fallopian tubes, where it becomes continuous with the peritoneum. It is covered with pavement epithelium, and secretes mucus without containing glands, except a few at the bulb. The middle coat is of unstripped muscular fibres and is a dartoid tissue which resembles the muscular structure of the uterus. This muscular coat is surrounded by a little erectile tissue, which blends with the fibrous coat. The external coat is fibrous, and greatly strengthens the vagina. The function of the vagina is to conduct the menstrual discharge and fetus from the uterus; to permit coition; to support the uterus. Its length when extended is four inches on its anterior wall; and five inches on its posterior wall; these being about one and one-half inches less when not extended. The vagina is moved with each respiratory act through its connection with the uterus. Its walls are in contact so as to close its cavity. Its uterine attachment is above the bottom of the uterus, which fits into it, as an egg into a cup.

(b) *Uterus*—Is divided into a neck, body and fundus, the latter being merely its arched roof. The unimpregnated uterus is pear-shaped, and measures externally three and a half inches in its vertical diameter,—internally one inch less. It contains two cavities, one "of the body," which is limited by the os internum, which is in primiparae one and a half inches;—the other "of the neck" in primiparae is one inch long. In multiparae these measurements are increased to one and three-quarters and one and one-quarter. The cavity of the neck extends from the external os (*os tincue*) to the internal os, and is longer in proportion to the body in children. Structure of the uterus is muscular and is in three layers. The exter-

nal layer is formed by the union of the fibrous ligaments and is transverse in direction. The middle layer is composed of fibres running in every direction. The internal layer is of fibres arranged in two cones whose apices are at the uterine orifices of the Fallopian tubes. At the neck the fibres are sphincteric. The cervical mucous membrane is in folds, called arbor vitæ uterinæ. Under the microscope are often found (ovulæ Nabothi) bodies egg like in appearance, that are glands secreting a gummy mucous (like partially dissolved gum acacia) that seals the mouth of the uterus after impregnation, preventing the escape of the ovum.

The arbor vitæ permits dilatation and imprisons zoöspermes (spermatozoa). Inflammation of these glands produces ceto-endometritis or cervical leucorrhœa, demanding their removal, as caustic applications are useless. The mucous membrane of the body is covered by columnar and ciliated epithelium and is studded with follicles that lodge in the tufts of the chorion. The inflammation of these follicles causes leucorrhœa, incurable in character. Under the microscope the epithelial cells from the body or neck may be contra-distinguished. The uterus is supported above by the broad, round, and utero-sacral ligaments. Below it is supported by the bladder and vagina. The peritoneum covers the upper three-fourths of the uterus anteriorly, all of its posterior surface, and the upper fifth of the vagina. Inflammation of structure within the broad ligaments (cellulitis) is very common. The round ligaments are about five inches long, and are of the same structure as the uterus, and elongate as the uterus enlarges during pregnancy. Under the microscope they are seen to be composed of continually growing fibre cells. These undergo fatty degeneration as the uterus undergoes involution.

(c) *Fallopian Tubes*—Are four or five inches long, and enter the uterus at its cornua, where the ovarian and round ligaments also join it. They are composed of the same structure as the uterus, and lined with mucous membrane, covered with ciliated epithelium. The fimbriated (free) extremities seize the ovum, which with blood (from ruptured corpus luteum) falls into Douglas' cul de sac. The tubes may take it from this cul de sac, or the two tubes may exchange ova. The spermatozoa work their way towards the free ends of the Fallopian tubes, against the action of the ciliae by the peristaltic movement of the tube.

(d) *Ovaries*—Are two small bodies (one on each side) situated in the posterior fold of broad ligaments, and are connected to the uterus by the ovarian ligaments, which are a half-inch in length. They are also attached to the Fallopian tubes. Their shape and size is that of an almond, being about an inch and a half long. They are covered by peritoneum, inside of which is a dense fibrous membrane (tunica albuginea) within which is the proper stroma or erectile tissue, having numberless Graafian follicles imbedded in it. These are seen in all stages of development. The ovaries are mobile, and have been found in hernial sacs. The Graafian vesicle approaches the ovarian surface from which it bursts at its full devel-

opment. It is enclosed by a fibrous membrane—enclosing another coat (ovi capsule) which contains the granulated coat (membrana granulosa). This latter coat contains a fluid in which the ovum is suspended enclosed in cells of the membrana granulosa, called discus proligerus. The ovum is from $\frac{1}{16}$ to $\frac{1}{4}$ of an inch in diameter, and consists of zona pellucida (vitelline membrane) externally; vitellus (yolk) next, in which is seen a vesicle, (germinative) and this vesicle has a spot (germinative spot). The Wolfian bodies are seen as old ruins beneath the ovaries.

SECTION SECOND.

FUNCTIONS OF REPRODUCTIVE ORGANS

ARE

1st, MENSTRUATION; 2d, CONCEPTION; 3d, PREGNANCY.

First.—MENSTRUATION and OVULATION occur in the human female at fourteen or fifteen years. The Graafian vesicle approaches the ovarian surface and becomes swelled by accumulation of its contained serum, and finally ruptures, discharging its contained egg, to be received by the Fallopian tube. Its cavity is filled by a clot of blood and gradually atrophies, being known after its rupture as the corpus luteum. Some three or four Graafian follicles reach the ovarian surface at one time—some animals have more. Symptoms of ovulation are pains in back, head, limbs, slight febrile movement, hysteria, &c., with marked congestion of uterine mucous membrane and intra-pelvic viscera generally. *Menses* consist of hemorrhage, lasting three or four days, from ruptured vessels; mucous and uterine epithelium are found mixed with the blood. The whole uterine mucous membrane may be exfoliated, constituting endometris (dysmenorrhœal membrane). The menses contain alkaline (uterine) and acid (vaginal) secretions, which in some cases render the discharge black and tarry, and in other cases offensive discharges may occur, capable of giving rise to gonorrhœa in the male. The menstrual discharge varies in amount from four to twelve or more ounces, and may only last a few hours, although much blood is lost. Members of a family are apt to present analogous menstrual peculiarities. Climate is not very influential, except it occurs earlier in life in hot climates. Diarrhœa and increased susceptibility to cold are occasional concomitants. Vicarious discharges (menstruation) may occur from lungs, nares, &c.. The ovule remains in the uterus from eight to fifteen days. The duration of menstruation varies from a few hours to eight or more days; idiosyncracies and hereditary tendency exerting an influence, its average duration being eight days. Very young children have been known to menstruate. The menopause occurs at the age of forty-three to forty-five. In rare cases conception may occur without menstruation—ovulation is however essential. During coition spermatozoa find their way into the uterus, assisted by the arbor vitæ, and fluid from glands of Naboth.

Second.—CONCEPTION. The ovule, leaving the ovary once a month, finds its way (sometime within the menstrual week) into the uterus. Immediate contact of ovule with the seminal fluid is essential to conception. Conception may occur within the ovary or tubes, constituting extra-uterine pregnancy. *Extra-uterine pregnancy* is known as *ovarian*, *abdominal*, *interstitial* (in uterine walls), &c., according to its situation. *Conception* is fecundation and fixation of the ovum, and it may occur within fourteen days after the menstrual epoch, being accomplished by absorption of the seminal fluid by the ovule. The ovule, in passing through the Fallopian tubes, becomes coated with a coat of albumen from which its nourishment is derived. The hypertrophy of the mucous membrane occurs and forms the decidua vera—a portion encircling the ovum, and being known as the decidua reflexa. The portion intervening between the ovum and the uterus is known as the decidua serotina. The corpus luteum remains until after parturition, and then its situation is marked by a permanent cicatrix.

Third.—PREGNANCY. The symptoms of pregnancy are referable to four heads: *1st, To Nervous Changes; 2d, To Blood Changes; 3d, Mechanical Causes; 4th, To the Child.*

The *Symptoms* differ before and after the fourth month of pregnancy. He who gives a positive diagnosis of pregnancy before the fourth month is either very learned or very ignorant.

1st. The Symptoms before the fourth month are gastric derangement, due to reflex action, which usually appears with the first two weeks of pregnancy. The symptoms resemble those of sea sickness. Morning sickness may or may not occur; its usual duration is about four months. The vomiting may be so great as to destroy life (Charlotte Bronte died from this cause). I ascribe death to starvation in such cases.

2d, Menstrual derangements are a valuable basis of diagnosis. The cessation at the end of the first month, and not recurring until parturition is most usual. One case in three thousand in which a species of menstrual flow continues through pregnancy. In these cases the blood comes from the vagina or cervix uteri.

3d. Buccal symptoms, consisting of puerperal pytalism (which is very rare, as I have only seen two or three cases) and odontalgia may occur, but are not valuable signs (the opinion of the laity to the contrary notwithstanding).

4th. Mammary symptoms are a pigmentary deposit in a dark circle around the nipple (a valuable sign as a link in the chain of evidence, but it may occur from other causes). A pigmentary deposit may occur in the linea alba, extending from the pubes to the umbilicus. In the negro the areola is darkened; in blondes there is little darkening, and much in brunettes. Towards the eighth month the mammae enlarge, and the veins are blue and engorged. At the end of the third month the mammae secrete a watery fluid. The glands swell and become nodulated, small glands appear in a circle around the areola or rather the nipple.

5th. *Kiestine* can be found in the urine at the end of the second month by putting it (urine) into a tumbler and leaving it in a temperature of about 75 degrees for three days. On the third day its surface presents flocculi, which increase into a thin scum on the sixth day, and gives off cheesy odors and breaks down in seven or eight days, and is redissolved in the urine. *Kiestine* is found in women who are not pregnant, who are *chlorotic, hysterical or nursing*.

6th. *The uterus* sinks down in the pelvis, owing to a weakening of its support and its enlarged condition, assuming the character of prolapsus in the first degree. It is slightly anteverted, the cervix being thrown into the rectum, and may produce marked tympanitis. These signs are valuable. Its size and sensibility may be detected by conjoined manipulation. A fibroid growth (in which case menstruation would continue) or subinvolution might deceive us. The uterus ascends from the cavity of the pelvis in the fourth month. *The theories of uterine growth are:—*

(a) The uterus develops from above, and at the end of the second month becomes entirely globular, the cervix disappearing.

(b) The uterus develops irrespective of the cervix, and becomes globular. The cervix does not grow in length, but becomes softened and thickened, and begins to dilate from below upwards. During the first month it allows a little of pulp of finger to enter, and at three or four months the os externum is soft, velvety, and pouting, and may admit the point of the finger, and at the ninth month the finger may be pushed directly into the uterine cavity. (This last is correct from observation. Prof. Taylor says not.) (Hills.)

7th. *The Vagina* becomes blue from a congestion of its veins, due to uterine pressure or other causes. The pelvic arteries pulsate strongly and rapidly until the uterus rises from the pelvis, when this symptom ceases. Artery on anterior of cervix also pulsates, and may be felt with finger.

8th. *The Navel* presents a curious symptom—pain from traction by the gravid uterus upon the urachus, and is quite a common occurrence. The navel may be depressed (*i. e.*, drawn inwards and downwards), and cause flatness of the belly, unless counteracted by tympanitis, which rounds the belly and leaves the navel depressed. These symptoms disappear after the fourth month.

The Symptoms after the fourth month are:

1st. *Cessation of gastric symptoms.*

2d. *Pouting of the Navel*, owing to relaxed urachus.

3d. *Abdominal tumor appears* (gravid uterus).

4th. *Fundus has risen.* Neck higher (by touch).

5th. *Quickening.* Sensations of movements of the child by the mother—a deceptive sign. Happens when a distended bladder gets between the uterus and the abdominal walls, and usually occurs at the sixth to the ninth month. Air or ascites may deceive us, and we must look out for the woman's veracity. The English law recognizes this as the period when vitality begins. (Not true.)

6th. *Ballotment* may be practiced between the fifth and seventh months. It is performed by pushing the finger up against the cervix and jolting the child, when, owing to its suspension in the liquor amnii, the foetus will rise up, and fall back against the finger with a thump. The woman is to be placed in an upright position. After the seventh month the child is too large, and great skill is required to obtain this sign. It is a sure sign, and I always get it when the head presents.

7th. *Fœtal Heart* (Bruit de Cœur) may be heard at the fifth, but more surely at the sixth to the ninth month. It is audible all over the uterus, and the sound resembles the ticking of a watch under a pillow; our own carotid or the mother's aorta may deceive us, but the fetal heart beats about 120-140 per minute, and is not synchronous with the pulse of the mother or our own. The pulse of girls is somewhat more rapid than that of boys.

8th. *The Placental Murmur* is synchronous with the pulse of the mother, and is heard at the location of the placenta—its diagnosis is difficult.

9th. *Fatal Movements* are felt by the accoucheur at fifth or sixth month by placing a hand, after dipping it in cold water, upon the abdomen, for ten or twenty minutes, when the child may be felt to kick. These movements are indistinct and hard to obtain.

SECTION THIRD.

EXTRA-UTERINE PREGNANCY.

An *Extra-Uterine Pregnancy* is one that takes place outside of the uterine cavity. Its varieties are *Ovarian*, *Tubal*, *Interstitial*, and *Ventral*, occurring in the ovaries, Fallopian tubes, uterine walls, and abdomen, respectively.

1st. *Ovarian Variety*, is denied by some authors on the ground that zoosperms cannot enter the ovaries. Impregnation of the ovule may occur without its having left the ovary (Graafian follicle) as the surrounding membrane is very thin.

2d. *Orario-Tubal* occurs between the ovary and the Fallopian tube.

3d. *Tubal* occurs when the ovule passed only partially through the tube and there becomes fixed after impregnation.

4th. *Interstitial Variety* is found when the ovule has become entangled in the uterine fibres.

5th. *Ventral Pregnancy* occurs when the ovule falls into the abdomen and there develops. Hernial sacs have contained ovules which have passed through the external abdominal ring.

GENERAL REMARKS AND PATHOLOGY.

Any variety of extra-uterine pregnancy may occur in a healthy woman, even if she has borne children. An instance is recorded of

a woman having had seven extra-uterine pregnancies, and dying in the seventh.

The tubal and ovarian are less dangerous than the abdominal variety, but they become dangerous by the fœtus breaking its coverings and escaping into the abdominal cavity. In the ovaries or tubes there are no utricular follicles, but where fixation occurs the mucous membrane becomes very vascular, forming a species of placenta, which affords nourishment to the fœtus. This vascularity may cause the mother's death from hemorrhage. The fœtus is surrounded by all its envelopes, except the decidua, which is represented by parts in the vicinity of the abnormal fixation. The decidua is formed in utero, and at the ninth month undergoes contraction, with the discharge of gluing mucus. The child now dies, and in about nine months more labor comes on again. The child generally develops up to the fifth month, and then rupture occurs spontaneously, and the mother immediately succumbs. There is no known cause for these anomalies.

DIAGNOSIS is difficult or impossible at first, and if made before the fifth month, a surgical operation may save the mother. Symptoms before the third month do not differ from those of normal pregnancy. In from one to four months there may be a gush of blood from the uterus casting off its living membrane (decidua), which develops as in normal pregnancy. There is an irregular development on one side (usually the left) of the abdominal cavity, causing a great deal of pain, fixed and aching in character (at about the third month) very likely due to the mechanical distention of the membrane. This development may be discovered by examination of the woman, if she is not too fat. This being discovered, suspicion is excited, and further examination may reveal fœtal movements. The uterus remains freely moveable and does not enlarge, and contains no fœtus. Should doubt exist, a sponge tent may be used and the uterine cavity explored. Some tumor may deceive us, and the fœtus may be found in its proper place; if still in doubt, we may tap the uterine sack and examine its contents.

The causes of the mother's death may be: 1st, *Hemorrhage*, which may kill her in five or ten minutes, owing to the great vascularity of the membrane; 2d, *Acute peritonitis*; 3d, *Abscess*, caused by putrefying remains of the fœtus; 4th, *Pyæmia*.

Treatment consists in:

1st. *Gastrotomy*, which is useless if the fœtus is dead and *in situ*. If it should be extracted death results from hemorrhage, and the operation is now generally abandoned.

2d. *Galvano puncture*. A needle connected with a battery may be passed into the sac, and be heated red hot by the current. This kills the fœtus, which then putrefies and produces suppuration and abscess, and is discharged, most commonly by the vagina, or by the rectum, bladder or perineum. This is similar to Nature's method (*our best means*), and is preferable to gastrotomy. Anæsthetics should be employed, and it should be borne in mind that the uterus

often contains a mass resembling a foetus, or cysts containing air, water, or blood.

3d. *Evacuation of the Liquor Amnii* produces about the same results, but is not so good a practice. If the foetus is contained in Douglas' cul-de-sac, a small exploring needle may be inserted, and the Liquor Amnii drawn off. The child then dies and putrefies, and at the end of a month an incision may be made for its removal, without danger from hemorrhage. In one case I had treated in this way, the cyst began to contract, ruptured, and caused death. I have since seen another, and it ended in the same way.

4th. *Injection* of ten drops of Magendie's Solution may be practiced with the same result as galvano puncture. I have never tried this method.

SECTION FOURTH.

DISEASES OF PREGNANCY.

The Signs and Diseases of Pregnancy are due to three sets of causes, viz.: NERVOUS, CHEMICAL, AND MECHANICAL.

1st. *Nervous* may be divided into *Gastric, Nervous, and Leucorrhæa*.

(a) *Gastric Symptoms.*

Dyspepsia, denoted by a feeling of starvation, nausea, vomiting. Excessive vomiting may occur before the fourth month, usually causing death by inanition or nervous prostration, a condition of sub-acute gastritis being produced. The pulse is rapid and thready; exhaustion and emaciation, etc. This is due to sympathy between the stomach and the uterus, or from congestion of the uterus, from its remaining too long in the pelvic cavity.

TREATMENT consists in the use of light diet. Milk, which *any one* can digest, at the beginning, if it is mixed with lime water or beef juice. A little later we may give beef tea, chicken broth, etc. The second indication is to assist digestion by Pepsin, Ac. Muriat, Bismuth, or a small blister over the stomach, or possibly leeches. Morphia endermically administered and open air will sometimes effect a cure, or something to eat before rising from bed in the morning. As anti-emetics we may use Ac. Hydrocyan dil. gtt. j every two hours. Carbonic acid, by means of effervescing draughts —(Soda Water, Champagne), Creosote, gtt. j on sugar an hour before meals; Oxalate of cerium gr. j y in pil. every 6–10 hours, or swallowing lumps of ice, or iced champagne, or

R

Acid Hydrocyan, dil.

Potassæ Iodid.

Ether.

Nitric Acid, gtts iij, V.

Chloroform, gtts, V.

three or four times daily.

If vomiting is excessive and dangerous examine the uterus at three months, for other causes than sympathetic may present. Congestion calls for three or four leeches to cervix through a speculum, but beware of producing abortion. Pushing and retaining the uterus by a pessary sometimes does good. Ext. belladonna may be applied to the cervix. Should starvation and death seem imminent, produce abortion, but *never* without a consultation.

(b) *Heartburn* is not due to acid, but is pure neuralgia of gastric or cardiac nerves. *Treat* as above mentioned for vomiting.

(c) *Ptyalism* cannot be benefited by treatment. Potassæ Iod., Potassæ Chlor. have been tried, but have not done good in general opinion.

2d. NERVOUS SYMPTOMS are:

(a) *Hysteria* may occur and requires *moral treatment*, which causes its disappearance for a week or so, when it will re-appear and require a repetition of the treatment.

(b) *Occipital headache*, occurs as a true neuralgia, and is very severe in its action. I treat it with pot. bromid, Zss—Zj. t. i. d.—or elixir ammoniæ valerianati, Zss.

(c) *Odontalgia*, is not cured by extracting sound teeth. Narcotics applied to the tympanum act on the molar teeth, such as bella. gr. 1-8 with glycerine on cotton. Chloral hydrat. (grs. xx, t. i. d., may be cautiously used.)

3d. *LEUCORRHOEA*, demands a strict cleanliness of the vagina, as-tringents should not be used. Syringe the vagina with warm water, with a fountain syringe carefully, as a *jet* of water would produce abortion. A little salt and acidum carboicum may be added to the water. Suppositories of cocoa butter, containing acidum tanni, cum gr. j—jj, may be used at night. Painful cramps may be relieved by morphia or aconite hypodermically administered.

CHEMICAL CAUSES.

1st. *PRURITUS VULVÆ*, is due to leucorrhœa of an irritating and ichorous mucus which flows over the vulva and produces an irritation of the labia and the inner surface of the thighs, and is increased by scratching. It is very annoying and keeps a woman from sleeping, and may produce *Abortion*. The origin of the discharge is the uterus.

Treatment, is to pack a large plug of cotton soaked in water and glycerine against the cervix, and to syringe the vagina daily with liquor calcis and retampon the vagina. Suppositories of cocoa butter and tannin may be used.

To quiet the irritation, I have been in the habit of using infus. tobacco (tobacco zss. aq. fervens Oj.) rubbed on the itching parts—this may produce a little nausea. Smoking may also be practiced.

2d. *HYDRÆMIA* consists in an altered condition of the blood, it containing less solid matter and more watery element. The patient appears chlorotic and heart murmurs may be present in consequence, they disappear after parturition, or by the administration of iron.

Associated with the murmur are such symptoms as palpitation and dyspnoea, oedema, &c. I have a patient who presented these symptoms in five successive pregnancies. Dr. Metcalf and I both erred in the diagnosis.

Treatment, should be fresh air, moderate exercise, rich diet, stimulants, (such as claret), bitter wine of iron, zss, t. i. d.; beef juice, &c.

3d. URÆMIA is generally accompanied by albuminuria, caused by pressure on renal veins and interfering with elimination of urea. Anasarca and convulsions may occur. Primipara are most often affected, and those pregnant illegitimately are especially liable, as they lace tight to avoid exposure. Pregnant women should not lace tightly. (*See Puerperal Convulsions.*)

4th. DROPSY OF THE AMNION, is an excessive secretion of fluid by the amnion, resembling ascites, seen at the fourth or fifth month, and is apt to prove fatal to the woman. It simulates pregnancy, and is apt to distend the uterine walls, making them very thin. The *symptoms* are obscure.

The woman has arrived at the fourth month and just feels quickening, yet the abdominal tumor is as large as at eight or nine months. Dyspnoea is marked, as is fluctuation, or all the symptoms of abdominal dropsy may be present. The dropsy is fatal to the child, and a rupture of the uterus, occasioned by sneezing or other causes, may destroy the mother.

Treatment, is to bring on premature labor, if the diagnosis is certainly made out. Should an uncertainty exist as to diagnosis, be careful, as amniotic dropsy may not exist, other membranes being diseased.

5th. *Placentitis*, in its first stage, is a congestion of the placenta. The child's movements usually cease, sometimes being resumed in a few hours. The woman experiences a dull heavy painful sensation near one horn of the uterus, with chills and slight febrile movement. This condition may pass off in a few days, or may end in effusion of lymph, which binds down the placenta. Blood-letting causes foetal movements to be resumed showing that there exists no uterine congestion. The *Treatment*, should be wet cups, followed by warm fomentations.

MECHANICAL CAUSES.

(a) *Congestion of Vaginal Veins* produces oedema of the labia, and is due to compression. (*See Page 31.*)

(b) *Hemorrhoids*, are due to compression of the portal veins, by the uterus; other effects of which are varicose veins, oedema of labia, phlegmasia-dolens, oedema of the feet, and pendulous belly.

The *Treatment*, consists in keeping the woman on her back, with her legs raised. Should this be impracticable, a bandage around the belly may be used to keep the uterus raised.

(c) *Incontinence of Urine* is caused by pressure upon the bladder; and its over distension.

(d) *Pudendal hematocele* is also due to pressure.

The *Treatment* of all the disorders due to pressure, is to raise the

uterus above the pelvis, by placing the patient on her back, and raising the foot of the bed. We must insist upon her keeping in bed for a month, if necessary. After the fourth month, pressure may be kept up, and the uterus may be lifted by an abdominal bandage. Lacing is to be forbidden, and finally pessaries may be required.

(e) *Placenta previa*, and *extra-urine* pregnancy, are not truly diseases, but act simply as causative conditions to disease.

(f) *Displacements*.

1ST. VERSION. Antero, retro or lateral.

2ND. FLEXION. The symptoms vary according to the organs pressed upon; and the change in functions of these organs aids in diagnosis.

The *Treatment*, before the fourth month is to place the woman upon her knees and chest, as sometimes gravitation effects a cure. Should this not prove successful, two fingers should be introduced into the vagina, and the fundus pushed up to its proper place. This may be done after the fourth month. Position is the main point to be maintained. Sometimes displacements cannot be prevented, owing to the size or form of the uterus; or the uterus may have remained in the pelvic cavity too long to permit its reduction. If the pelvis is too large, the child's head is apt to pound the cervix, and induce premature labor.

SECTION FIFTH.

ABORTION, Etc.

1st, ABORTION;

2d, PREMATURE LABOR.

Abortion applies to delivery *before* the seventh month.

Premature Labor applies to delivery *after* the seventh month, and before the *tenth* month.

Miscarriage is an *unscientific term* and should be dropped.

The line of demarcation between abortion and premature labor is drawn at the seventh month, because at this period viability usually begins. I believe cases in which children are said to live when born before the seventh month are very rare.

Abortion is quite frequent; as almost every woman who has borne four or five children has experienced abortion; some women have had as many as twenty or thirty. From 2,000 cases there were 747 women (1232 children) who had aborted (Manchester). The time when abortion is most apt to occur is at the end of the third month, at the time the menstrual period would have occurred had there been no impregnation. In 602 abortions, 35 occurred at the end of the second, and 275 at the end of the third month, and 147 at the fourth month (Whitehead). The periods stand in relation of frequency, third month, fourth month, second month, rare at the first and fifth months, but it may happen at any period. If we wish to produce abortion, the end of the third month is the time to be preferred.

The Etiology may be divided into *Nervous Causes*, *Mechanical Causes* and *Chemical Causes*.

1st. *Nervous Causes* are nursing during gestation, the patient failing to recognize her condition (and many women think impregnation impossible if they continue to nurse). Fissure or cracking of the os uteri may, by reflex irritation, cause abortion. Puerperal Leucorrhœa, with pruritus vulvæ sometimes has the same effect. Sudden fright, violent mental emotion, have also produced the same effect, as do many apparently trivial causes. Great nervous impressions may, however, fail to produce it, and such slight causes as bad or nauseating smells have produced it.

2d. *Mechanical Causes* are falls or blows upon the uterus, or elsewhere and even a light blow, not perceived by the mother, may destroy the fœtus. Uterine displacements are a common cause; they should be sought for by vaginal examination. Placental apoplexy may be produced by placentitis, and it may result in gangrene and destroy the fœtus. Uterine tumors may be present, and all their symptoms may be present, and abortion occur without their presence causing us to be misled in our diagnosis of the cause. Dysmenorrhœa from a bleeding ulcer upon the cervix may cause us to use treatment that causes abortion. Dropsy of the amnion, which occurs at the fourth or fifth month, is a cause. Pelvic cellulitis, which binds down the uterus by adhesions and thus prevents its growth, is another cause. Menorrhagia may be treated in a manner to produce abortion.

3d. *Chemical Causes* comprise endometritis, which will surely produce it; a diseased funis or one ruptured or knotted; anything causing death of the fœtus in utero; blood poisoning, as variola, &c.; scarlatina, rubeola, uræmia, syphilis, typhoid, &c., carbonic acid gas (from living in bad air); inflammation of placenta (placentitis), or plethora may also act as causes.

PATHOLOGY. Fœtus may be expelled, and the membrane may remain in the uterine cavity, hence the danger of criminal abortions; or the entire fetus and its envelopes may be expelled, leaving the decidua; or the fœtus, envelope and decidua may be expelled, leaving the uterine muscular coats bare. Previous to the third month, the decidua is as thick as the uterus. The expulsion may be divided into two stages: 1st, *dilatation and fetal detachment*; 2d, *fœtal expulsion*. Of the dangers we may say that, in scientific hands, with a clear conscience, all usually ends well; but the following accidents may occur:

(a) *Puerperal Tetanus*. When the fœtus comes away entire, the muscles of the uterus are laid bare, and tetanus may follow.

(b) *Pyæmia*. If membranes are left in uterine cavity, they putrefy; pyæmia or septicæmia may result from absorption of putrid matter. This is a great source of danger.

(c) *Hemorrhage* may occur when portions of the membranes remain attached to the uterine walls.

(d) *Metritis*.

Women rarely die from abortion. The stage of placental forma-

tion at the menstrual epoch is the usual time when abortions occur (i. e., at third or fourth month), unless caused by a sudden accident. The symptoms are uterine contractions or bearing down pains, uterine hemorrhage, irritable stomach and nausea, some exciting cause. Much hemorrhage kills the child and weakens the mother.

INDICATIONS FOR ABORTION.

(a) *Excessive nausea* or vomiting, when dangerous to life may produce gastritis, or starvation, or syncope from weakened heart's action.

(b) *Puerperal Nephritis*, when uræmia is marked and œdema occurs, demands immediate delivery.

(c) *Deformed Pelvis*, if found to be three inches in its antero posterior diameter, may allow the passage of child at term, by forceps or version. If only two and a half inches, delivery is demanded at seven months, although the child may die.

(d) *Placenta previa*, when accompanied by an uncontrollable or profuse hemorrhage, demands delivery.

(e) *Impending death* of the mother also demands delivery, as the child may be saved: and even some hours after the mother's death, children have been saved.

(f) *Fatty placenta* may occasion a cessation of the fœtal movements at the seventh month; and the child may die before the eighth month, if not delivered.

The treatment of abortion, when contractions exist or are coming on, consists in attempts to stop them, if possible, and failing in this, to try and facilitate them. The contractions are best controlled by placing the patient in bed, with the bottom (foot) of the bed raised, and interdicting conversation, evacuating the bladder in bed with a catheter, but not moving the bowels, and administering Opii (ii. iij grs.) by the mouth or rectum, (or Morphia gr. $\frac{3}{4}$), or Plumbi acet. (Ice over the abdomen is uncomfortable, and should not be used.) Ice-cold fluid food, iced lemonade, and acids, are excellent. Cold cloths may be spread over the labia and thighs, and perfect rest must be enjoined; and should these measures fail, allow nature to act, *unless the hemorrhage is excessive*, which calls for the following *Treatment*. If the os uteri is not dilated, never use ergot, as our object is to dilate the cervix, and to separate the fœtus. Apply first the tampon and dam up the blood, which acts by its hydrostatic pressure in ripping off the fœtal ball and dilating the cervix, as well as acting to check the hemorrhage. This must be done effectually in every case, and the procedure is only dangerous when there is too much room in the uterus to fill up with blood, thus endangering the mother. The woman should lie on her back, and flex the knees, having her hips raised. The application of the tampon is best effected by Sims' method, viz., Distend the vagina with a speculum, and pack in small balls of dry cotton, firmly at first, and filling out the vagina with dry cotton; then put on a T bandage, and tie the thighs together. The tampon should be left in the vagina twenty-four hours, when it should be removed with long forceps. The tampon should not be used after the sixth month, nor when the

uterus is empty, nor after the sixth month unless the membranes are intact. If the patient objects to the tampon, use Barnes' colpeurynter filled with ice water, and do not give any ergot or other drugs during the first stage. In the second stage ergot may be used with advantage, but it is not always needed. Should the ergot fail to act, we may administer an irritating enema of turpentine, and an emetic or stimulatory may aid expulsion of the fetus. In the second stage ipecac. may be used for this purpose, or an active cathartic to produce brisk purgation. As an enema we may use:

R.	Ol. Terebinth.	
	Ol. Ricini,	a a ozj.
	Pulv. Rhei,	q. s.
M. et ft.	enema.	

Ergot usually acts in from twenty to thirty minutes.

Manual delivery is objectionable, on account of leaving in the uterine cavity portions of the membranes. If some time after, we find absorption of putrid material taking place, we must introduce a speculum, and with a depresser separate the uterine ball and deliver it. If the os is not dilated, some use sponge tent, but I have abandoned this, as it has caused death. Barnes' dilators cannot be used. I prefer to inject antiseptic solutions, and wait for the dilatation of the os; and if there is much pain inject Magendie's Solution (10 gtts). Do not use Gallic Acid or lead. The placenta may remain for several months, and then be discharged without evil effects. Preventive measures may be employed, such as introducing the hand, always placing the patient under an anæsthetic. Abortions may be prevented by removing those nervous, chemical, and mechanical causes. Perfect rest at the time at which menstruation might occur, especially at the second, third, and fourth months. If a woman habitually aborts, at the time the child is viable, we may by care deliver the child with safety. Want of oxygen is a common cause of such abortion, and we may use potassa chlorat. as a remedy. Of the *Methods for bringing on abortion*, we may use the following:—

1st. *Hamilton's Method* is to pass a silver catheter between the decidua reflexa and the uterus, and thus induce contractions. It is a slow method, and is most applicable after the fourth month, and is not very safe before the seventh month, but is excellent when the child is viable.

2d. *The Warm Douche, or Kiewsch's Method*, is performed by introducing the nozzle of a syringe into the os, and injecting warm water for fifteen minutes, and repeating this every three hours for two or three days. It is only used after the sixth month.

3d. *The Sponge Tent* is the best method before the sixth month. It is introduced through the os internum, care being taken not to break the fetal shell. The vagina is then to be injected with warm water (to expand the tent). This is followed with a larger one, and so on until the os is sufficiently dilated, when ergot and an enema may be given. This method acts in twelve hours.

4th. *Ergot*, in the second stage, is very valuable in stimulating existing contractions, but it has no tendency to produce contractions. It can be used before viability, but after that time its use will destroy

the fœtus by producing placental anæmia from permanent tonic uterine contraction.

Its use after viability is not interdicted if twenty minutes will accomplish delivery.

5th. *Colpocyrus* is the term applied to the use of a bag placed in the vagina and then distended with warm water. Its action is like that of a tampon by hydrostatic pressure, and we use the tampon in its stead. It was introduced by Barnes.

6th. *Hydrostatic Dilatation* is our most valuable method during the last four months. Barnes' dilators (which are fiddle-shaped bags, and of which there are three sizes) are introduced into the os, and water injected into them. Tents may be used to pave the way for the smallest size.

7th. *Cohen's Method* is to inject through an elastic catheter, water enough to distend the uterus. It may be used after the sixth month, but there is danger of rupture.

8th. *Puncturing the Membranes* is a rapid method, but there is danger of the membranes remaining and causing septicæmia.

9th. *Meisner's Method* is to puncture the membranes high up, and allow the slow escape of the fluid. This method permits the child to live, but there is danger of retention of the membranes.

10th. *Uterine Catheterization* is very valuable after the seventh month, and it acts in from eight to twenty-four hours. The cervix is opened by a tent, followed by a dilator. A gum elastic catheter is then introduced between the membranes and the uterus and left there one hour. Should this not succeed try it again on the other side—ergot in this case is able to kill the fœtus. We cannot often use the above means singly, but are required to combine them more or less. Let us take a case at the end of the third month, requiring delivery in twenty-four hours; we would proceed as follows:—Use a rubber cloth to catch the discharges; place the woman in obstetrical position; place a tub of warm water (95°) and inject a stream into the uterus for thirty minutes, (this renders the parts soft and distensible). Then turn the patient on to her left side and introduce a tent, and then repeat the warm douche for another half hour. In four hours remove the tent, and introduce a larger one, followed by the half hour warm douche. In four hours more use a still larger tent, followed as before by the douche for half an hour. This will open the cervix and ergot will finish the operation. If the woman should be bleeding or feeble, we could use the tampon to aid in ripping off the fœtal shell. In case of deformed pelvis, we can act more slowly. In case of urinæmia at eighth month, we must be careful to save the child. We can begin by using the warm douche three times a day, which may accomplish our purpose. If this is unsuccessful we may employ catheterization, as I do not like dilators in such cases, unless contractions have begun. Do not use ergot, and if necessary deliver by hand. An enema of Ol. Terebinth. and Ol. Ricini may aid us.

The remarks made above apply equally well to premature delivery, as to abortion, and our main object is to save the life of the fœtus after the seventh month.

SECTION SIXTH.

DURATION OF PREGNANCY.

CONCEPTION generally occurs within fifteen days after ovulation.

Pregnancy usually lasts nine months, or 274—280 days; this, though a general rule, has exception, and labor may come on at the eighth or tenth month. In cases of missed labor, the fœtus may undergo fatty degeneration and remain in utero forty years. A child born ten months after its father's death may be a legal heir (Scotch Law), and so may a child born at eight months.

To calculate the probable time of labor, we must: 1st, first fix the time of last perfectly normal menstruation; for instance, January 1st, 2d, Add to that the number of days required for menstruation—say five; 3d, Add the number of days required for conception—say ten; 4th, Add to that nine lunar months, or 280 day, which is within two or three days either way. Thus

1st, January 1st.

2d, Add Menstruation—5 days.

3d, Add Conception—10 days, *i. e.* January 15th.

4th, Add Gestation—9 months, *i. e.* October 15th.



PART SECOND.

SECTION FIRST.

THE PELVIS.

The bony pelvis may be regarded as a cylinder contracted near its middle by the linea ileo pectinea, which divides it into a “true pelvis” below, and “false pelvis” above. The former has for its bottom or outlet, the coccyx behind, arch of the pubes in front, and the tuber ischii on either side.

The diameters of the true pelvis are, on an average, $4\frac{3}{4}$ inches; its depth is two inches in front, and $5\frac{1}{2}$ inches behind (6 inches following the curve, and $4\frac{1}{2}$ —5 inches in a straight line)

The Straits are a *Superior* and an *Inferior*.

The Plane of the *Superior Strait* slopes downward and forward at an angle of 60° with the horizon; while the plane of the *Inferior* slopes upward and forward at an angle of 40°

The *Axis of the Pelvis (Superior Strait)* is a line drawn perpendicular to the centre of its plane, and corresponds with a line drawn from a point about one half an inch above the umbilicus to the tip of the coccyx.

The *Axis of Superior Strait* corresponds to a line drawn from a point about an inch above the umbilicus to the tip of the coccyx. Importance of remembering this in order to obtain a correct impression of the relation of the head of the fœtus to the brain during labor.

The *Axis of the Inferior Strait* is a line drawn from the second sacral vertebra, through the centre of the bis-ischiatic space. The

diameters of the superior strait are antero-posteriorly four inches, oblique four and a half inches, transverse, five inches. Diameters of the inferior strait are, antero-posteriorly five inches, oblique four and a half inches, transverse four inches. These are average measurements.

The *Curve of Carus* is that made by a line drawn perpendicularly to the centre of a series of planes extending from the superior to the inferior straits, and corresponds to the axis of the true pelvis. The diameters of the fetal head are divided.

First.—LONGITUDINAL. *Occipito Mental*, $5\frac{1}{2}$ inches.
Occipito Frontal, $4\frac{1}{2}$ inches.
Sub-occipito bregmatic, $3\frac{3}{4}$ inches.

(from midway between occipital protuberance and foramen magnum, and extends to anterior fontanelle.)

Second.—TRANSVERSE. *Bi-parietal*, $3\frac{1}{2}$ inches.
Bi-temporal, 3 inches.

Third.—VERTICAL. *Fronto mental*, 3 inches.
Trachelo bregmatic, 3 inches.

(from anterior margin of foramen magnum, to the highest point of the vertex.)

PRESENTATIONS AND POSITIONS. •

The presentation may be defined as that part of the child which is touched by the finger of the accoucheur passed up the vagina. The position is relation of the presenting part to the points of the pelvis. The most common presentation and position is the vertex to the acetabulum of the pelvis.

CLASSIFICATION.

1ST. CEPHALIC; divided into	{ Vertex. Face. Ear.
2D. PODALIC; divided into	{ Breech. Knee. Foot.
3D. LATERAL; divided into	{ Back. Abdomen. Side.

The vertex presentations and positions in order of frequency are:

- 1st. Vertex to left acetabulum.
- 2d. Vertex to right sacro iliac synchondrosis.
- 3d. Vertex to right acetabulum.
- 4th. Vertex to left sacro iliac synchondrosis.

I usually speak of only four positions:

- 1st. Left acetabulum. L. O. A.
- 2d. Left sacro iliac synchondrosis. L. O. P.
- 3d. Right acetabulum. R. O. A.
- 4th. Right sacro iliac synchondrosis. R. O. P.

CAUSES OF LABOR.

Under this head

BROWN SEQUARD says: That as the time for labor approaches, the uterine sinuses are much enlarged, and the blood reaches a point of saturation with carbonic acid, which causes the uterus to contract, and he ascribes abortion to carbonic acid when women live in bad air.

DR. BEDFORD says: The uterine fibres grow until the sixth month, and having then attained their maximum size have a tendency to contract, which increases until, at the ninth month, parturition is accomplished. We know, however, that the muscular fibres are under the control of the ganglionic nerves, and that irritation sufficient in amount (no matter how produced) will excite their contraction in the parts to which the irritant is applied, provided it possess muscular tissue. Now, whenever the child, by its bulk, movements, or death, becomes a source of sufficient irritation to excite contraction, we have labor. This generally occurs at the ninth month, but it may occur before or after from any adventitious causes.

SIR JAMES SIMPSON says: That fatty degeneration begins in the placenta, and it is ordained that it is to be ripe at the tenth menstrual period, and must therefore be cast off. This does not answer the question—What causes the uterine fibres to contract?

DR. POWERS says: Pressure of the head on the nerves of the cervix (cerebro-spinal nerves) causes uterine contractions at the ninth month (because the cervix cannot longer support the weight of the head). "Activity of the Liquor Amnii" and "instinct of the child" were formerly considered causes of labor. ARISTOTLE's theory, that labor was brought on by "the will of God," we are forced to accept. TYLER SMITH considered the ovarian changes a cause.

THE CAUSES OF PRESENTATIONS. Instinct was formerly considered a cause for the vertex presentations, which occur in about 95 per cent. The weight of the head was also considered a cause. The size of the breech we now know to be the cause. The breech being largest accommodates itself to the largest part of the uterus; in the early months the child floats in the Liquor Amnii, which is then in excess. In the latter months, reflex action causes the breech to go up and the back of the child to present to the abdomen of the mother, as the feet, being very sensitive, escape to a part where they will not suffer irritation. It is because reflex irritation is destroyed that we commonly see mal-presentations in the dead foetus.

THE MECHANISM OF LABOR HAS FIVE STAGES.

- 1st. *Lateral Obliquity.*
- 2d. *Flexion.*
- 3d. *Rotation.*
- 4th. *Extension.*
- 5th. *Restitution.*

1st. *Lateral Obliquity* is caused by the descent of the head to the superior strait, where it comes into contact with the sacral promontory, and is deflected laterally.

2d. *Flexion* is caused by the head being balanced, so to speak, upon the spinal column, and having more length of lever on the side of the chin than on the side of the occiput.

Resistance is furnished by the chin striking the sacrum. Flexion gives us a shorter diameter (sub-occipito-bregmatic) in the left oblique position, supposing normal presentation.

3d. *Rotation* is caused by the descent of the head into the pelvis, when the occiput juts against the spine of the ischium and rolls around into the anterior plane of the pelvis, the occiput getting under the symphysis, and the chin into the hollow of the sacrum. The sagittal suture then lies in an antero-posterior position of the outlet of the pelvis.

4th. *Extension* begins by the body of the fœtus flexing itself slightly upon the posterior plane, in order to correspond with the curve of Carus, and thus the chin departs a little from the breast. The occiput being engaged under the symphysis, the force before exerted upon it is transferred to the chin, and in this manner complete extension occurs; and the sagittal suture, bregmacomal suture, nose, mouth and chin, in succession at the vulva.

5th. *Restitution* occurs in consequence of rotation of the head back to its relative position to the body, as soon as the head has cleared the vulva and all pressure is removed; the occiput now looking towards the left thigh of the mother, and the face towards the right thigh. This is an important means of verifying your diagnosis of the position when the labor began. Caput succedaneum is caused by the compression of veins of the child's head, which is passed through the pelvis. It is due to the effusion of serum in the part of the head not pressed upon, and is generally opposite the vaginal opening. If the position is R. O. P. (right occiput posterior,) the caput is on the left parietal bone. If L. O. A. (left occiput anterior), it is on the right parietal bone: thus it changes according to position.

Vertex presentation occurs in nineteen cases in twenty. L. O. A. occurs in seventy per cent. of these cases on account of distended rectum, which is on the left side of the coccyx. R. O. P., etc., occurs in thirty per cent. of these cases. R. O. A. and L. O. P. are rare presentations. In L. O. A. the occiput occupies the left ilio pectineal eminence, the forehead is at the right sacro iliac synchondrosis, and the sagittal suture corresponds to the left oblique diameter, the right shoulder is at the right acetabulum, the left shoulder is at the left sacro iliac synchondrosis. The dorsal plane of the fœtus is in front and to the left. Anterior plane is behind and to the right. The diagnosis of this is made by introducing the hand into the vagina and feeling for the fontanelles or sutures, or the prominent points. Follow out the sutures to the fontanelles and make out the position.

The anterior fontanelle is the larger, is diamond shaped, and is

bounded by four long projections, and has four sutures connected with it. The posterior fontanelle is the smaller, is triangular, with three bony projections and sutures.

A good simile of labor is powder, gun and ball.

The powder being represented by the mother's forces ;

The gun being represented by the mother's passages ;

The ball being represented by the mother's fœtus.



SECTION SECOND.—A.

A NATURAL LABOR is one performed in accordance with nature's laws, within twenty-four hours, without accident to mother or child, and the child presenting by vertex.

1ST STAGE.—*Cervical dilatation* occupies twice as much time as the second stage. This stage consists in the thorough dilatation of the cervix uteri, and is accomplished with recurrent pains over the symphysis, and peevishness of the patient, who growls and grumbles. The pulse is regular. This stage may occupy a variable time, from a few hours to a month, and is not dangerous, as it is under the control of the ganglionic system. Do not interfere. The dilatation is accomplished by the bag of waters which protrude through the cervix into the vagina. Their even pressure prevents laceration of the cervix. The bag being fixed at the placenta, the head may rupture them below at any period during the first stage by being forced against them. They do not always rupture, however.

2D STAGE.—*Fœtal expulsion* begins at the end of the first stage and ends with the birth of the child. This stage is under the influence of the cerebro-spinal system, and, if too long continued, exhausts the woman. It is accomplished by strong bearing-down pains, assisted by the abdominal muscles. The pulse increases, the face flushes, countenance is anxious, etc. In this stage the head pushes against the vagina, rectum, symphysis, etc., being no longer separated from the mother's parts by the membranes. *The stages of labor are like a man going through a gate ;—he opens it in the first stage, goes through in the second stage, and shuts it in the third stage (if he is a good law-abiding citizen).*

3D STAGE.—*Uterine Contraction* consists in complete, permanent, tonic contraction of the uterus, the placenta being expelled, leaving the patient free from danger if maintained. The placenta may immediately follow the fœtus, or be expelled any time during this stage. It is accompanied by decrease of pain, and feeling of relief. It is under the influence of the ganglionic system. I always use ergot, during this stage, to act as a sentinel ; but I consider him who uses it before the third stage a dangerous practitioner. The duration of this stage is usually twenty or thirty minutes.

Symptoms of a premonitory character occur two or three weeks before labor begins.

(a) *Subsidence of the abdomen*, which is due to condensation of the uterus and to its descent into the pelvis, from the relaxed condition of the pelvic muscles, etc.

(b) *Increased moisture of the passages.*

(c) *Parts are relaxed, woman cannot walk well.*

(d) *Nervous disorders, peculiar despondency, restlessness, etc.*

(e) *Irritable bladder and rectum.*

Immediate symptoms are as follows :—

(a) *Pain from symphysis to fundus uteri.*

(b) *Formation of pouch of waters and cessation of fetal movements.*

(c) *Increased irritability of bladder and rectum.*

(d) *Rigors* (similar to what is felt when urinating on a cold day).

(e) "*Show*" consists of a plug of mucus from the cervix, and generally a little hemorrhage—a *sure sign*.

(f) Very commonly *nausea* and *vomiting*, which come on with the dilatation of the cervix.

(g) *Uterine contractions*, sometimes very slight, and yet they return with regularity and are generally very disagreeable. *False pains* may appear in the back, or pelvic muscles. *True pains* begin at the symphysis and recur regularly, and increase in severity.

MANAGEMENT DURING LABOR.

When called, go with *obstetrical haste* : and do not forget to take a *lancet*, to bleed in case of convulsions ; a *catheter* ; *ergot*, to complete the third stage ; *opium*, to rouse the nervous system when the woman is prostrated by post partum hemorrhage ; and *chloroform*, which can be used when the occiput reaches the perineum, to relieve pain. I use it in this way, and it never does any harm.

DIAGNOSIS FROM EXAMINATION.

Always approach your patient directly upon the subject. Inquire about former labors, symptoms, etc. When the ice is thus broken, make a vaginal examination, having previously directed the nurse to prepare the woman for it. *Leave, if you cannot get a vaginal examination, after proper means.* Empty the bladder and rectum. Place a yard of rubber cloth under the sheet—under the buttocks—also a blanket and sheet, folded in four, should reach to the knees. When the second stage comes on, let the chemise be rolled up to the armpits. If, on vaginal examination, the funis presents, push it back. The patient should be placed on her side to be examined. The finger passed under the knee, and up into the vagina. Feel for the os externum ; notice how much it is dilated. Then examine the whole pelvis for abnormalities, and finally pass the finger through the cervix and find the sutures and fontanelles, and diagnose the position. You can hardly detect more than the presentation at the first examination. You will find the fetal heart increasing in intensity as you pass from the symphysis upwards. When you have made your examination, allow the woman to rise, and tell her that the first stage may last twenty-four hours. The erect position favors the dilatation of the

os, by gravity, of the fetus and the bag of waters. In ordinary cases examine every hour, but you may have to examine oftener. When the cervix is well dilated, and the bag is about to rupture, put the woman in bed to prevent the prolapse of the funis. Do not give your assistance too soon in the beginning, merely feel how the head is coming on. As soon as the occiput is at the symphysis, place a finger upon the head and keep it there. Tell the patient when she feels a pain coming on to take a long breath, and bear down as much as possible. When extension is about to take place, support the perineum; and chloroform may now be used. We can aid extension by depressing the head, and getting the *sub-occipito mental* for the occipito mental diameter. Up to this point it is dangerous to press upon the perineum, for so doing causes contraction. We may stretch the perineum by the thumb and finger, between the labia. When extension is accomplished, feel for the cord, and if it is wound round the neck or shoulders, loosen it. Watch the face of the child, and see that it is not becoming suffocated. Do not drag upon the child, for fear of inversion and hemorrhage. In the second stage, follow down the contracting uterus by a hand upon the abdomen, which will prevent hemorrhage. Do this in every case. It never produces puerperal fever, as Dr. Barnes asserts. When the head has passed the vulva, support it by the hand, and wait for contractions to occur. As soon as the child is born, tie the cord, and watch carefully the contracting uterus. The cord should be tied three fingers' breadth from the abdomen, stripping up the Gelatine of Wharton. Tie the fetal end first, then strip an inch and a half, and tie the maternal end, and cut between the two ligatures. When this is done, rapidly clean out eyes and mouth of the child, and wrap it in a flannel blanket, and hand it to the nurse. Then attend to the mother. Deliver the placenta gently, and bury it in the yard; see that the uterus is firmly contracted, and then apply the bandage—this should run with the fibres and be placed in front. Do not apply a towel over the vulva, as it would act as a tampon to favor hemorrhage. The towel should be placed below, to catch the discharges. Remove the rubber cloth, etc., from beneath the mother; put on a dry gown, and allow her to lie on a dry bed. If the child does not breathe when born, slap its buttocks sharply and throw water upon it, dip it into hot and cold water alternately, use artificial respiration, electricity, etc. Dress the cord by wrapping it in a square piece of cotton cloth, cutting a hole in its centre to pass the cord through, and lay it on the left side of the abdomen and apply a body bandage over it. The cord is laid on the left side to prevent any injury to the large liver on the right side. The cord is tied three fingers' breadth from the abdomen, to avoid including any intestine in the ligature, or producing peritonitis. Avoid leaving so large a mass as to produce suppuration. The bandage should be wound round the child two or three times, and be fastened with pins or sewed. The child should be washed in warm water, and have oil or lard rubbed over it—not thoroughly at first, as the neonatus is not able to produce or maintain heat at first, *i. e.*, immediately after birth. Should the child be puny and feeble, do not

wash it for twenty-four hours. The water should be heated to 98 degrees Fahr. Always wait for the uterus to entirely expel the child, before you aid in getting away the placenta. It is generally cast off in fifteen minutes. We may stimulate the uterine contraction by artificial means. As soon as the head is born, place a hand on the uterus and push it firmly down, and continue to grasp and press it every five minutes until the placenta comes away which you may know by feeling the cord loose. We may feel a crackling when the placenta separates. The uterus diminishes rapidly after this, when the placenta gets into the vagina. If the placenta does not come away in fifteen minutes, you must press it off by grasping the uterus and firmly pushing down, aided by slight traction upon the cord. Should this not succeed, give large doses of ergot for an hour, continuing the pressure. If not removed in an hour, introduce one hand into the vagina, and soon into the uterus and detach it, keeping two hands upon the abdomen. Hour glass contraction is merely a bugbear, for the hand readily passes through it. The body bandage lessens the danger from syncope, but has no effect on the mother's shape. The French never use them. If the body bandage alone (pinned from above downward) does not keep the uterus contracted, we may apply compresses beneath it over the fundus of the uterus. Advise the woman not to bear down in the first stage of labor, as it only exhausts her. When called, find how long labor has been in progress. We may assist the first stage by passing the finger through the os, and dilating it in every direction. When the anterior lip is pinned to the symphysis, push it up. When the bag protrudes through the labia, and will not rupture, puncture it, taking care not to injure the child. While the head is in the vagina you may stretch the perineum until extension begins, when it needs support. When the pains are on, do not let the woman exert herself; but as soon as they are off, make her brace herself by a deep inspiration, and bear down her best.

MANAGEMENT AFTER LABOR.

We should remain with the woman one hour, as, if hemorrhage occurs, it will do so within this time usually. Never, therefore, trust this hour to the woman or nurse.

To prevent hemorrhage our rules are: Never pull out the child, but allow the uterus to expel it; follow down the contracting uterus. Never remove the pressure by hand from the uterus until the placenta is expelled and it is firmly contracted. If it does not relax, she is safe from hemorrhage. When the placenta is not expelled pass the hand in and unbutton it. Never bandage until the uterus is firmly contracted. We must attend to these duties if ten hours are required to perform them. When about to leave, give a dose of ergot to act as a sentinel until your return, and have the child applied to the breast, which aids contraction by sympathy. The child should take no cathartic, as the colostrum acts sufficiently upon its bowels. It should go without food until milk appears (on the third day) if possible. It may suck something from the breast meanwhile.

Should this be impossible, give the child a little sugar and warm water. The mother may have, immediately, a cup of good tea, beef broth, chicken soup, or any light fluid food. Over-feeding, indigestible food or starvation are improper. The child is nourished, in part, for the first three days, by an albuminous secretion in its stomach, and in part by what it gets from the mother's breast. Should the mother's milk fail to appear on the third day, try to keep the child, if possible, without cow's milk; if this is impossible, give it only in small quantities. The child should be applied to the breast one hour after birth, to encourage the lacteal secretion, as well as to cause the clots to be expelled from the uterus, especially in *Multiparae*.

After pains do not generally occur in *prima paræ*, as the uterus contracts firmly. After pains are due to clots of blood left behind, and to relieve and aid them we use chloroform and opium, or, we may give.

R

Ext. Ergot, fl. ʒ i.

Elixir Opii, M. xx.

and tell the woman to bear down and the clots will be expelled. The woman should be kept in a quiet and darkened room. When the bandage is removed, examine for piles, and, should any be found, push them above the sphincters. The patient may begin to move around on the ninth day, but should not leave the house during the puerperal month. Flexions or versions may be the result of breaking this rule.

Prescribe, for after pains and no sleep:—

R

Camphoræ pulv. ʒ i.

Ergoti pulv. ʒ iv.

Opii pulv. grs. vi.

Pulv. et div. in pulveres No. XII.

For partial suppression of urine, due to functional disturbance of kidney:

R

Spts. Etheris Nitrosi, ʒ ij.

Potass. acet. ʒ ss.

M. Sig. ʒ ij. in water.

For Paralysis of the Bladder:—

R

Ext. Ergot, ʒ ijss.

Ext. Nucis Vomiceæ, M. xxxij.

Aq. distil. ʒ j. M.

For Headache:—

R

Ammon. Mur. ʒ ij.

Spts. Vini Acetici, ʒ iv.

Aq. ʒ iv.

Fiat lotio.

For Constipation:—

R

Magnesia Sulph.

Magnesia Carb.

Potass. Bitart, *aa* ʒ ss.

Sulphuris Subli.

M. Sig. ʒ ss in water.

Artificial nourishment may be required for the child, if the mother's milk does not appear on the third day.

A mixture of water (one part) and milk (three parts) with a little sugar, heated to 95° Fahr., but never boiled, is, perhaps, our best resource if a wet nurse is not obtainable. The milk should not be more than six hours old. Nurses of good qualifications are rare, and should be thoroughly examined before they are accepted (See Vogal on Milk, etc.) The mother's food for the first forty-eight hours should be nutritious and easily digested. Immediately after delivery a large tea-cup of beef tea may be given, it will not excite any fever. Her hunger may be satisfied with toast, buttered, bread and milk, hominy, gruel, etc.; but solid food should be withheld for three or four days. The milk fever appears on the third day. A cathartic may be given, such as *Ol. Ricini*, *Pil. Rhei. Comp.*, *Seidlitz powder*, etc. If the patients are accustomed to wine we may give a little of it.

ANÆSTHESIA IN LABOR.

is produced by *Ether and Chloroform*, because a small quantity suffices, and it leaves no bad effects. It has never but once caused death, and then was used by an incompetent nurse. Given when pain exists, it seems to do no harm. To prevent pain which the accoucheur is to cause, it is dangerous. Two hundred (probably two thousand) recorded deaths have occurred when used for this latter purpose. In small quantities it seems to aid contraction. It should not be given until the head reaches the floor of the pelvis. Lung and heart diseases are contra-indications to its use. If it retards labor, do not use it. Always get the patient's permission, and never abuse its use. Do not use it in the first stage, as it weakens the uterine efforts. I advise its use in every case, unless there is some counter special indication. It is given in this way: first, oil the face to prevent erosion; then pour ʒ ss on a handkerchief and hand it to the woman herself, and when she has enough she will drop it; repeat this at each pain. When extension is taking place, put her profoundly to sleep, preferably. I do not like ether, owing to its disagreeable after-effects. It may be given with or without admixture of air, acting more rapidly the less it is diluted.

A certain number of labors present features common to two or more of our classification, the treatment being a combined one; their occurrence is rare, however.

SECTION SECOND.—B.

UNNATURAL LABOR.

is due to three causes, viz.:

- 1st. THE DISTURBANCE OF THE MOTHER'S FORCES;
- 2d. THE ABNORMAL CONDITION OF THE MOTHER'S PASSAGES;
- 3d. AN ABNORMAL CONDITION OF THE CHILD.

The first of these may be divided into three conditions, viz.: 1st, *Precipitate*; 2d, *Tedious*; 3d, *Powerless*.

PRECIPITATE LABOR is one in which an abnormal degree of rapidity marks the accomplishment of the parturient act. There is always a certain amount of danger attending it. The child may be expelled while the woman is standing, and be forced violently upon the floor. The waters may be expelled with the bag complete, and the child be drowned.

There is always danger of post partum hemorrhage, but this is rare. Labor will occur before the arrival of the accoucheur. Sudden inversion is also a danger. An unpleasant circumstance is the liability of delivery in public places. My impression is that precipitate labor never takes place, except as a result of very violent contractions, and in a justo major pelvis. I have not known it to occur in pelves of normal size, although I have investigated carefully. This might be called "*Labor with deformed pelvis*," although more conveniently classed here. Labor has taken place in a reported case during sleep, without awakening the mother; the only impression she experienced being a dream, in which she dreamt that she had a stomach-ache; the child was found alive under the clothes. Our treatment should be preventive; a large pelvis does not render a precipitate labor positively necessary, but a previous precipitate labor renders a second one likely. The patient should be kept at home during the last month, and in her room during the last week; and, at the first symptom of pain, should take to her bed. A competent nurse should be with her during the last month; the nurse should understand how to conduct a labor.

TEDIOUS LABOR is one in which there is great retardation in accomplishing the first stage. The limit is anywhere beyond twenty-four hours. We should thoroughly understand Tedious labor. There is no danger from exhaustion, it being under the influence of the ganglionic system.

The causes of Tedious labor may be arranged under two heads, viz.: Those that prevent the contraction, and those that prevent dilatation. Under the first may be classed:

1st. *Inertia Uteri* is brought about by sedentary, very effeminate lives, and bad hygienic surroundings. It is sometimes hereditary. Over-distension may produce inertia, or any cause for tedious labor eventually ends in this condition.

Our treatment is, first, to exclude every other cause, and, if this is the primary cause, stimulate the uterus by manipulation on the abdomen, by forcing down the uterus (*expressio-fœti*.) Irritation

may be produced by introducing a catheter and leaving it in. The woman should walk about. Stimulate the cervical nerves by two fingers, for the inertia may be due to the nervous state of the organ coincident with numerous conditions, such as chlorosis, constipation, etc. We may use warm and cold douches alternately. Never use ergot, as it produces tonic contractions, and will kill the fœtus in utero. It might be given if we were certain that the head would be born in half an hour, as compression of the placenta can be borne no longer, and there is also danger of rupture. A corporuta in the vagina for two or three hours, or a stimulating enema, may be of service.

2d. *Excessive Uterine distension* is due to a multiplicity of children, dropsy of the amnion, etc. It will cause the uterus to become lazy and unable to contract. To remove the cause is our only treatment.

3d. *Distended Rectum or Bladder* may cause inertia. Why this effect is produced we do not know, but it is a fact. Examine, and do not take the nurse's statement; treat by evacuating them.

4th. *Mental Emotion*, as marked depression, joy, fright, may produce tedious labor; even the entrance of the doctor may cause it.

The causes of Tedious Labor that act by preventing dilatation are:

1st. *Rigidity of the os*, produced by a deposit of lymph from an ancient inflammation, or by an œdematous condition of the cervix—everything remaining in statu quo.

The treatment is to place the woman in the obstetrical position, and apply a warm douche, by Essex syringe, for thirty minutes, and repeat it at the end of an hour. Another method is to give a nauseating dose of tartar emetic (gr. $\frac{1}{2}$ – $\frac{1}{4}$), in sugar, and, strange to say, the os sometimes dilates. Still another method is to use tents followed by Barnes' dilators (this is our surest means), or by the finger introduced and the cervix spread apart (which rarely if ever fails). An anæsthetic aids in the manœuvre. I do not advise the lancet, as it is not legitimate. Belladonna, painted on the os, is not to be advised, as it may poison the woman.

2d. *Toughness of the Membranes* may prevent their rupture by the child, and the bag may be born entire. *The treatment* is puncture.

3d. *Premature Rupture of the Membranes* is called, by nurses, "a dry labor." This removes the hydrostatic pressure for opening the cervix. We may treat by the warm douche or Barnes' dilators, both of which are sure to remove the difficulty.

4th. *Obliquity of the Uterine Forces* is very rare. The os is carried forwards or backwards, and contractions force the child against the anterior or posterior wall of the uterus. *The treatment* is to pull the os into place with the finger, and the difficulty immediately disappears. Anæsthesia may be produced, if deemed advantageous.

5th. *The anterior lip* may be pinned to the symphysis, causing œdema of the cervix from the pressure of the child's head. *The treatment* is to push the head back.

6th. *Short funis* may prevent the passage of the child, and is difficult to diagnose, and more difficult to treat. An operation may be called for. The cord may be shortened from being wrapped round the fetus. (See further remarks, under head of Unnatural Labor due to child.)

POWERLESS LABOR makes it an anxious question as to the absolute safety of the mother or child, as the cerebro spinal system is at work. It belongs to the second stage of labor, and we cannot afford to wait, as in tedious labor: there being great danger of death to the child, and of exhaustion and other evils to the mother. Prompt action is always required.

Its causes are:

1st. *Want of inherent power in the uterus.*

2d. *Fatty degeneration of the uterine fibres.*

3d. *Urinæmia.*

4th. *Slight disproportion between the head and passages.*

5th *Tedious labor in the first stage.*

Its dangers to the child are prolonged compression on the placenta, interfering with the circulation. Compression of the brain for forty-eight hours will also produce death. The child may die from compression of the cord also. The operation which is called for also endangers the child.

The dangers to the mother are that metritis may be induced, and puerperal fever, septicæmia, etc., result. Again, there is danger of exhaustion, especially when the nervous system is deteriorated by weakening influences. Fatal collapse may result. Again, the head, by pressing on the tissues, interferes with circulation, and produces œdema, which makes delivery all the more difficult, and we may have, as post-partum results, fistulæ of various kinds. He is culpable who allows a powerless labor when he is at the bedside, and he must therefore know it thoroughly, to be able to do his duty.

Its symptoms are:

Restlessness and wilfulness.

The uterine efforts become irregular and weak, only coming on every ten minutes, and lasting but two or three minutes. The head remains stationary. Great heat and dryness of the vagina, and the parts become œdematous, which indicates an alarming condition. The pulse becomes rapid continuously, and not, as is usual, increasing during the pains, and subsiding in the interval between them; it may, in powerless labor, go to 110 to 120 during the pains. Tenderness over the abdomen is a late symptom, and is due to the pressure of the child on the uterine nerves, the uterine fibres becoming very sensitive. Olive discharges come from the uterus, and are due to congestion and a change in the secretions. Blood and fetid matter pour forth when the head is pushed—this is a late symptom. Vomiting of bile often is persistent. Rigors and chills may be slight or marked. Dry tongue, very unnatural in character, is seen, and husky voice is apt to be a marked symptom. A change in the face is observed, the eyes being sunken and surrounded by a dark areola, and the face is dusky and anxious. The patient appears as one

after great fatigue and exhaustion. These are late symptoms, and I hope my students will never see the late symptoms of powerless labor.

The treatment will rest upon a full knowledge of the case, and if doubt exists a consultation may be called. Stimulation will not be sufficient; a resort to "*expressio fœti*" is demanded. Do not use ergot unless you are certain that a little more power will drive out the head of the child over the perineum in fifteen minutes. Should these means fail, deliver by an operation. These are the most favorable cases for *forceps*, which must always succeed, inasmuch as labor has already reached the stage when extension alone is required to complete the delivery. Sometimes the parts are so swollen that we cannot apply forceps, in which case we must resort to *craniotomy*, in order to save the mother, if not the child.

2d Cause. *Unnatural labor, due to the passages through which the child is propelled*, may be considered under two heads, viz. :

1st. OBSTRUCTED LABOR. 2d. LABOR WITH DEFORMED PELVIS.

OBSTRUCTED LABOR is one in which any obstruction exists in the soft parts of the mother. The obstruction may exist, even above the Superior Strait.

The causes of obstructed labor are as follows:—

1st. *Imperforate hymen*. Either from calcareous degeneration, or other causes, the hymen is unyielding, and requires to be incised.

2d. *Constriction of the vagina*, due to old ulcers (*Atresia*), or calcareous degeneration; and should be incised.

3d. *Cancerous or cartilaginous degeneration of the os or cervix* may occur, and incision may occasion dangerous hemorrhage; but still we must incise to save the child, as the mother will probably die from the cancerous disease.

4th. *Pelvic tumors* may be cancerous, fibrous, or cystic; they may occur between the rectum and the uterus, or within the vagina; if in the latter situation it is a polypus, and must be cut off with an *ecraseur*. These pelvic tumors should be explored with a fine twyer, and if fluid should be evacuated; if solid, the woman should be placed upon her knees and the tumor pushed above the superior strait, if possible, until after the head passes. Sometimes an ovarian tumor falls into Douglas's cul-de-sac. If there is two and a half inches of space, we may use the forceps. Lastly, *craniotomy* or *Cæsa-rean section*, may be required. Of these, craniotomy is to be preferred, and the latter alternative resorted to only when the passage is too small even for the body of the child to pass, and such cases are of rare occurrence.

5th. *Impaction of feces* require an injection of nut-gall, after emptying as much as possible by the finger. This may be repeated, or we may inject warm water to soften the feces, and then scoop them out with a spoon handle.

6th. *Cystocele*. There is danger of rupture when the catheter is introduced. If impossible to introduce a catheter, puncture may be made through the rectum or vagina, and the contents thus drawn off. It may sometimes be emptied by the pressure of the head.

7th. *Rigid perineum* may not be overcome without the forceps, and they should be used at once, provided the laceration is not excessive and the perineum then closed by sutures.

8th. *Incarcerated anterior lip* may occur from the anterior lip being compressed between the head and symphysis, and becoming œdematous. It should be pushed back, and the labor allowed to progress naturally.

9th. *An unyielding band of fibres* at the os interinum would constitute a labor in which the first stage had not passed, and it is due to some diseased condition. Dilatation by means of the warm douche, or Barnes' dilators, should be performed, if possible. Should the woman be nervous, give her chloroform and dilate with the fingers; or, failing in these methods, slit the cervix with a knife or scissors.

The dangers of Obstructed Labor are: Death of the Child; Death of the Mother; Induction secondarily of Powerless Labor; Sloughing of the Soft parts.

The Diagnosis is quite simple. The labor is supposed to be going on normally, but the head does not advance. An examination for some obstruction reveals it in either the vagina, bladder, rectum, or pelvis.

The Prognosis depends on the degree of powerless labor induced, and the skill of the accoucheur in removing the cause.

The treatment presents three indications, viz: To remove the cause. To bring the child past the tumor, if it cannot be removed. To remove the child by an operation.

2d.—LABOR WITH OBSTRUCTION IN THE HARD PARTS. (DEFORMED PELVIS).

The normal pelvis measures in both straits, four to four and a half and five inches. Anything that diminishes any one of these diameters, constitutes a deformed pelvis, with a labor in which there is obstruction due to the long passages. The deformity may be in the brim cavity or outlet. The general shape of the woman is no guide to the size of the pelvic cavity.

The *Etiology* is divided into *six heads*, which are *sub-divided* into *twenty parts* (See Classified Table).

1st. *Congenital deformities* are due to *justo major, justo minor*, and pelvis resembling that of the male.

2d. *Rachitis* causes *six* deformities, *Ovate, hour-glass, cordiform, cordiform rostrated, plano sacral and concavo sacral.*

Rachitic pelvis are diminished in their antero posterior diameter. The disease is due to deficiency of deposit of phosphate of lime in early life. It is deposited later in life, but the deformity that began in early life remains—it occurs in childhood.

3d. *Malakosteon* causes *four* deformities:—*Oblong, oblong rostrated, cordiform (in rare cases), and rostrated.* *Malakosteon* diminishes the lateral diameters, and it is due to absorption of animal matters and the deposit of fat in their place, *i. e.*, it is properly a fatty degeneration of bone, and is known also as *fragilitas* or *mollities ossium.*

4th. *Anchylosis* has *two divisions or forms: Oblique ovate*, due to inflammation in early life, resulting in *anchylosis* and *non-development*, and not to *rachitis* or *malakosteon*, and *coccyx prominens.*

5th. *Dislocation produces spondelolisthesis*, a simple name for dislocation of the last lumbar vertebra.

6th. *Adventitious deformity* comprises four varieties: *Fracture of the pelvis*, producing deformity by the effusion of callus; *bony tumors of any kind*; *approach of the tuber ischii*, and *jutting inwards of the spines of the ischia*.

Deformed pelvis may be classified as follows: (See also Classification Table).

ABSOLUTE DEFORMITY.	<i>Justo Minor</i> .—Infantile deformity, a symmetrical arrest of development, size dwarfish. <i>Justo Major</i> .—Excessive development. <i>Male</i> .—Resembling male pelvis.
RELATIVE DEFORMITY from RACHITIS.	<i>Cordiform</i> .—Heart-shaped, very common. <i>Hour-glass</i> .—Resembling figure 8. <i>Cordiform rostrated</i> .—The worst we have. <i>Plano-sacral</i> .—Sacrum straight. <i>Ovale</i> .—Shape of a perfect oval.
RELATIVE DEFORMITY from MALAKOSTEON.	<i>Oblong</i> .—Anterior posterior diameter increased. <i>Oblong rostrated</i> .—Oblong, with a beak in front. <i>Roitrated</i> . <i>Cordiform</i> . (Very rare).
RELATIVE DEFORMITY. from ANCHYLOSIS.	<i>Oblique ovale</i> . <i>Anchylozed coccyx</i> . (Coccyx prominens.)
RELATIVE DEFORMITY from OTHER CAUSES.	<i>Spondelolisthesis</i> . <i>Fractured Pelvis</i> . Callus thrown out. <i>Deformity from any bony tumor</i> . <i>Approaching tuber ischii</i> . <i>Jutting in of the spines of the ischii</i> .

The Dangers arising from deformed pelvis are: *Powerless Labor*, *Rupture of the Uterus*, *Sloughing of the mother's parts*, *Puerperal Fever*, *Operation which is called for*, *Probable death of the Child*, *Minor Causes*.

The Symptoms are: Quickening early when the pelvis is small (probably). Late quickening indicates a large pelvis. The child usually quickens as early as the third month, but a woman with a normal pelvis does not feel it. If the pelvis is small, the abdomen becomes pendulous from the pressure of the uterus. *The symptoms during labor* are very prominent: the cervix is dilated, and yet, when the finger is introduced, it does not tighten during a pain. The fingers can be introduced between the bag of waters and one of the lips of the os; and the os can be moved from side to side, which means that the head is kept above the superior strait. Again the finger can be introduced far up into the uterus and not feel any presenting part indicating either deformity or malpresentation.

Slight deformities are common in all countries ; ovate pelvis is very common ; cordiform is one of the worst varieties. Early quickening is a bad sign, as it indicates deformity ; hence, if a woman says she quickened at the second or third month, always make a vaginal examination. Listen to the foetal heart, and thus exclude malpresentation. In the second stage of labor violent pains will excite suspicion of deformity.

Diagnosis. I desire to sap your confidence in pelvimetry : it is unsatisfactory. In some women deformity of pelvis causes them to waddle (like a duck), and excites suspicion. Previous difficult labors excite suspicion also. The bag ruptures early, and the head is nearly or entirely out of reach. To further the diagnosis, pass the finger beneath the symphysis, and try to reach the promontory of the sacrum. If we touch it, the superior strait is too small transversely. For the plano sacral, or concavo sacral, measure the inferior strait. The fingers are the best pelvimeter ; or, we may use the shoemaker's rule which nicely measures the superior strait, but the intervening planes between the superior and inferior straits cannot be measured by it. The instrument for measuring transversely (invented by a New York student), which consists of two arms which spread transversely, is not reliable, owing to the resistance of the soft tissues. Callipers are of no use. Dr. Lumby's instrument may be used for antero posterior measurements.

The treatment consists in first ascertaining if the operation of *craniotomy* has been performed, and if so, we consult, to prevent any charges being made against us. Then, if the deformity is not very great, we allow the case to go on, so that premature delivery may be practiced, and thus save the child. If this cannot be done, produce abortion in early stages. *The rules for operating are :* If an antero posterior diameter is less than four and more than three inches, use the forceps ; if from two and a half to three inches, perform version ; if from two to two and a half, craniotomy ; if less than two inches, Cæsarean section will be required. We should wait no longer than to satisfy ourselves that nature will not do her duty. Version may succeed when forceps fail. If a woman is delivered while malakosteon is in progress, the labor is easy, for the pelvis may be narrowed or widened. If the trouble is due to coccyx prominens, introduce the hand into the rectum and fracture it.

Deformities usually affect the superior strait.

3d. *Cause.* *Unnatural labor, due to causes pertaining to the child,* will be considered under the following eight heads :—

- 1st. *Deformity.*
- 2d. *Number of children.*
- 3d. *Short funis.*
- 4th. *Disease of the child.*
- 5th. *Excess of development.*
- 6th. *Malpresentation.*
- 7th. *Malposition.*
- 8th. *Multiple presentation.*

1st. *Deformity* is of two varieties, *absolute* and *relative*. *Absolute deformity* is due to the labor passing the ninth month, the child continuing to grow. The child may weigh seventeen pounds. I removed one weighing over sixteen. Emphysematous child in another example. There is danger in both varieties of powerless labor. *Examples of relative deformity* are enlarged head, ascites, enlarged liver, other enlarged organs, or tumors, distension of child's bladder, monsters. The heads of children may be very large from hereditary tendency. The bones may become ossified to so great an extent as to prevent compression; in this way the head becomes virtually enlarged. The child may have hydrocephalus transmitted from a syphilitic father. If the head is hydrocephalic, examine with the finger, and you will find the head high up, the sutures wide open and the fontanelles very large and fluctuating. Palpation will aid, and under anaesthesia, the entire hand may be swept round the head. If large head is hereditary, we do not find open sutures and large fontanelles.

The treatment is to tap the hydrocephalic head, and the child may be born alive. The ossified head we should deliver with forceps, by version or craniotomy. Enlarged head (hereditary) demands craniotomy. Ascites demands tapping.

Enlarged liver requires embryotomy, as do other enlarged organs, tumors and monsters. A distended bladder may be tapped.

2d. *A number of children* is abnormal. Two or more presenting may make labor tedious, and we may have multiple presentation (See "Tedious Labor," Dangers, etc.).

3d. *Short Funis* causes danger of inversion or hemorrhage. This will leave a mark round the neck of the child, and in some cases is important in a medico-legal point of view. The head becomes arrested in the pelvis. I have had two cases in twenty years. The body springs back like a ball after each contraction of the uterus, owing to the elasticity of the funis. The fundus may also be depressed. If we can reach the cord it must be cut; if not, ergot may be used, to aid in reaching it. Deliver at once after cutting the cord (See page 34).

4th. *Diseases of the child* (under this head, vide Deformity, p. 38.)

5th. *Malpresentations*.

6th. *Malpositions*.

7th. *Multiple Presentations all come under Malpresentations.*

MALPRESENTATIONS.

- | | |
|----------------------------|------------|
| 1. HEAD, | { Face. |
| | { Ear. |
| | { Brow. |
| | { Arm. |
| 2. TRUNK, | { Abdomen. |
| | { Back. |
| | { Breech. |
| 3. PODALIC EXTREMITY. | { Knee. |
| | { Foot. |
| 4. MULTIPLE PRESENTATIONS. | |

Face Presentations occur once in 250 cases, and occur from extension taking place in the beginning of labor, instead of at the end. The cause is a premature escape of the liquor amnii: as this rushes out, the face is carried suddenly down and presents. Obliquity of the uterus may cause the head to strike against the linea ileopectinea, producing early extension. Great degree of inactivity in the flexor muscles of the head may also cause it. *The dangers to the mother are powerless labor and its consequences. To the child there is danger of death from mechanical congestion*—the arching of the neck producing compression of the jugular veins. This in twin labor may produce convulsions. Yet only one child in twenty dies (nearer one in fifty or sixty). The *prognosis* is good. Tell the friends that the child's face will be "*hideous*" when born, owing to pressure and congestion, but that this will pass away in a week or so.

The Mechanism is: the chin is commonly thrown towards the right sacro iliac synchondrosis—next to the left, and so around, as the face descends, or long diameter (lever) runs down and the occiput ascends. The reverse of the vertex presentation. The chin next strikes against the posterior plane, and is thrown forward, and gets into coincidence with corresponding acetabulum. It is then thrown into the anterior pelvic plane by the spine of the ischium, and the head, having turned a full half circuit, presents the chin under the symphysis.

In rare cases this does not occur, but almost invariably in such cases the head and thorax are jammed together into the pelvis, and an operation is demanded.

The Diagnosis is made from the following points: Longest diameter of the head presents (occipito mental, $5\frac{1}{2}$ in.), and the labor is always slow. There are no sutures to overlap. It becomes tedious or painful, and even powerless. There is no caput succedaneum to open the cervix, and the head is enlarged from congestion. By touch we feel no sutures, and may confound it with a brow presentation (we would, in brow, feel the anterior fontanelle), or a transverse presentation (we would, in transverse, feel an arm or cord), or breech (we would here feel a hole, if mouth it sucks, if anus, meconium is found). We may confound nose with coccyx, and tuber ischii with malar bones. Further, by palpation we discern the head high in the abdomen, and the foetal heart increases from the symphysis upwards (the reverse in face). We may use anæsthesia to obtain a clear diagnosis.

Treatment. If an early diagnosis is made, may be to change it into a vertex by introducing the hand (the patient being anæsthetized) and turning the head. We should make the attempt, as it would be very acceptable if accomplished, and will do no harm. The hand is as good as the vectis, or we may introduce the hand into the os, and try to bring the chin to the front before the head is engaged. Do not interfere when the head is well wedged into the pelvis; leave it to nature, as the child may be delivered unassisted. If the signs of a powerless nature come on, then interfere; first use forceps, next vectis—if an adept. It is a dangerous instrument.

Next craniotomy, entering the cranium through the eye. The swelling seen after birth of head may be treated by a lotion of Liq. Plumbi acet.; or, Aq. 3 parts and Alcohol 1 part.

Ear presentations are almost unknown, and are managed as *face presentations*.

Brow presentations produce different labor, for we have neither face nor vertex. As a rule, they alter to face presentations, and require the same management. Forceps sometimes.

Transverse presentations occur in one case in 250, and always require an operation. The foetus presents across the pelvis, and the accoucheur introducing his hand feels some position of the child's side; the laity call this "a cross birth." *The varieties are arm, abdomen and back.* The shoulder generally presents; the back and abdomen rarely. *The causes are* that at the seventh month the foetus is more likely to present in any position rather than the head. We meet most often transverse positions in cases of premature birth. The death of the child causes the reflex actions, which in part cause the head to present, to be wanting. The uterus may be flattened vertically, and hence the long diameter of the foetal body is in coincidence with the long transverse diameter of the uterus. Sudden blows or falls, etc., may cause the child to turn round.

The mechanism is: the abdomen of the foetus may be in front, with its head towards either the right or left side of the mother. The abdomen usually is anterior or posterior, and not upwards or downwards. The abdomen may be towards the mother's back, with the head to either the right or left side of the mother. The arm does not present early in labor; it is only when the shoulder has passed the superior strait. The head then becomes crowded into the pelvis, the body being bent. The cord is now apt to be compressed and cause the child's death. The labor becomes powerless and the woman dies of exhaustion, or, if operated upon, puerperal inflammation. The child may now change its presentation and be delivered by spontaneous evolution, or the sweeping of breech over the perineum, or spontaneous version may occur. *The diagnosis is* made by feeling the presenting part through the vagina; by the bag of waters presenting like the finger of a glove into the vagina; by the long diameter of the uterus being transverse; by the head being in one iliac fossa and the soft breech being in the other; by the foetal heart being heard higher than normal; by sense of touch; after rupturing the membranes and recognizing some part.

The Treatment, after the diagnosis is clearly determined, consists in operating as soon as possible, as follows: performing external version when the waters are intact; bimanual version; internal cephalic version; internal podalic version (see operations); or, if the feet or body become oedematous, and the child is so wedged in that version is impracticable, embryotomy is our only resource; cutting open the thorax and abdomen, eviscerate them and deliver. *The prognosis* is bad for both mother and child. This is the most fatal malpresentation.

Breech presentations occur once in fifty cases; one or both feet or a knee may come down. We take this as a type of malpresentations of the podalic extremity, the main idea being that the head is to come last, which fact renders the subdivision (proper breech, knee, foot) unimportant. This is called also pelvic and podalic presentation. They are next in frequency to cephalic presentations. The causes are large cephalic extremity that seeks the upper part of the uterus. Any accident that turns the child over and wedges it in the pelvis, especially in the late months; or the death of the child, and the consequent loss of reflex action.

There are two positions, the back of the child to the abdomen of the mother, and the back of the child to the back of the mother. In both, the position is oblique from the left acetabulum to the right sacro iliac synchondrosis, or from the right acetabulum to the left sacro iliac synchondrosis.

The prognosis is good for the mother and very bad for the child (one child in four dies; the French say one in ten). Tell the patient that statistics show more deaths from this than from any other cause, owing to its frequency. It is next in relative fatality to transverse presentation. When the knees present, the prognosis is still worse. The prognosis is better if one foot descends than if both do. The reason for this is that the passage is not so much dilated as it ought to be. The prognosis is most favorable in the (proper) breech variety. The dangers to the child are from apnoea, from compression of the cord. In a natural labor, the head being born first, the extra-uterine lungs can work if the cord is compressed; of course this is not so in this case. The child cannot breathe with its extra-uterine lung. The child may even cry in the pelvis and live a few moments. The compression usually occurs between the head and the superior strait in the second stage of labor. The head would soon pass, but by the time it does pass the child is dead, and hence the mortality. Compression may also be caused by the chest. If the obstetrician pull upon the body, the arms, as they strike the superior strait, are thrown up alongside the head, and we then have the head *with* the arms, to pass the strait, which increases the difficulty of passage, and renders the danger from apnoea greater. There is danger of fracture of the processus dentatus, if the obstetrician pulls upon the body of the child.

The mechanism is, the back is generally towards the abdomen of the mother, as the feet, being most sensitive, escape from reflex irritation, and find the most comfortable position they can, which is backwards. The long diameter of the child's pelvis corresponds with the long diameter of the mother's. When the child's abdomen is forward, we have two other positions. Coming down in the first position, the spine of the child is towards the right acetabulum. One trochanter strikes against the anterior plane and goes down; one hip escapes under the symphysis, and here the side of the child is arrested. The other hip then escapes over the perineum and the child is then thrown upwards and outward in coincidence with the superior strait. Then the feet sweep out, then the arms,

and lastly the head; the occiput is arrested at the symphysis, the chin sweeps over the perineum, and the child is born. If the abdomen of the child is forward, everything goes on as before mentioned until the head comes down, when the chin catches under the symphysis, and the head is retained. The occiput may now sweep over the perineum, rupture it, and the child be born, or flexion may take place and the occiput pass without difficulty.

The diagnosis should be made early. I have had twenty-six cases and not a death, and I attribute this result to an early and sure diagnosis, with or without anæsthesia.

The Symtoms are the shape of the bag, which is longer and narrower than usual, and somewhat pointed. By touch we do not feel the hard head, but the soft breech, and on the abdomen we can feel the head high up, if the woman is not too fat. No sutures can be felt. The maximum intensity of the foetal heart increases from the symphysis upwards. When the bag ruptures, which is early we can feel a soft body (which might be face), the differential diagnosis is hard. The trochanters and malars feel alike. Coccyx also resembles the nose, anus resembles the mouth, but in the anus we find the fingers stained with meconium, and in the mouth the finger is sucked. We may feel the genitals. Diarrhoea of meconium may occur from pressure upon the child. We may give chloroform, and then introduce the whole hand, and thus clear our diagnosis.

Our objects of *treatment* are to retard the first stages of labor to prepare the passages; to dilate the passages; to deliver from pressure above, and not by traction below; to rapidly deliver the arms, breaking them if necessary; to make traction on the lower jaw, and admit air to the child, besides ergot and obstetrical position. Before resorting to any other means try external version; though it generally fails, I have succeeded in accomplishing it. Always explain to the patient the likely death of the foetus. I advise a consultation as a matter of duty and policy. Do not yield to vanity in the matter, for you need assistance of a consulting physician's strong arm, Young physicians generally lose such cases. When the breech is at the superior strait, make the labor as long as possible, to dilate the passages. Tell the woman not to bear down. The physician should remain in the house. Do not break the bag of waters, as they aid dilatation. We may, in the early stage, aid the vagina in dilating by colpeuryesis (under anæsthetics), if necessary. Remember that the breech is compressed to a point, and does not dilate enough to allow the passage of the head. Warm water may be thrown against the os, and we may even distend the perineum by colpeuryesis. When the breech engages the pelvis, place the woman in the obstetric position, and be ready, as one effort may deliver the child, away up to its armpits. The breech will sweep over the perineum in about sixty seconds. Let the breech stay in the vagina as long as it will, employing no traction whatever; support the perineum when the breech passes it; evacuate the rectum and bladder early. When the breech is delivered there is then danger of compression of the cord, and we must deliver as rapidly as possible. First, draw down the cord, and if it beats, wait; it generally beats five seconds; now

we may give ergot (which should never be given in the first stage) and practice "expressio fœti," powerfully urging the woman to bear down with her abdominal muscles, thus making use of three varieties of "vis a tergo." Give the ergot in time for it to be ready to act. When the arms are below the superior strait, pass two fingers over the acromion process, sweep down to elbows, and deliver them instantly. They may be broken, but no matter, as it is better to break the arms than to lose the child. They will heal very rapidly when wrapped in flannel, and starch or plaster bandages. Next rapidly carry two fingers into the mouth of the child, and swing it around the curve of the pelvis by throwing the body back over the mother's abdomen. While we are doing this, "expressio fœti" should be practiced by the assisting physician. I think it best to leave the forceps at home, as I have never seen a living child delivered by them, as the child dies before they can be applied. When the arms pass the perineum, we may begin to develop a "vis a fronti" by traction. Since I have followed the above rules, I have had twenty-six cases, and not a death. If convulsions come on in the meantime, deliver speedily by some means, whether the child dies or not. If the breech remains perfectly fixed in the superior strait, we cannot use forceps, they would cut through the child's abdominal muscles, but we must use fingers as a hook (the best way), or a silk handkerchief swung around the thighs, or, lastly, a blunt hook, which is dangerous, and I advise you not to use it if you can help it. If these means fail, give anæsthetics, and pull the breech up, and bring down the feet, delivering the child by main force, embryotomy is your last resort.

SECTION THIRD.

COMPLICATED LABORS

are considered under seven heads. viz.:

PROLAPSE OF FUNIS.
HEMORRHAGE.
PUERPERAL CONVULSIONS.
RUPTURE OF THE UTERUS.
INVERSION.
RETAINED PLACENTA.
SYNCOPE.

PROLAPSE OF FUNIS is next in fatality to breech presentations, occurring in one case in 250, and fifty per cent. die. The accident only endangers the child's life, although the means used to remove its dangers, may endanger the life of the mother. The cord falls down first, while in natural labor, and it is wound round the fœtus. The danger to the child is from compression of the cord, or its becoming chilled, if it remains outside the body of the mother. Its causes are malpresentations, in which case the superior strait is not corked up by the child's head as in vertex presentations. Sudden

escape of the waters while the woman is on her feet, also their escape in advance of a pain while the head is not filling the superior strait. Hence always rupture during a pain, if called upon to rupture at all. Great length of the cord may cause its prolapse, and more than twenty-four inches may be considered abnormal. Deformity of the pelvis and placenta previa, also act as causes of prolapse or funis.

The treatment to commence with should be the "postural method." The woman being placed on her chest and knees, which turns the uterus nearly upside down, and causes the cord to return to the uterine cavity by its gravity, or we may introduce the hand, and return it. A hard bed is essential to success in this method. We then aid labor by getting the head wedged into the pelvis in advance of the cord. Another method is to use the forceps, by which the child may be dragged out as quickly as possible. These are especially useful if the head is compressing the cord. We must deliver it in two minutes, but rapidity of motion is dangerous to both mother and child (the latter is usually dead in such cases), and hence it is usually best to let the child alone, and allow it to be delivered by nature. Another method is version, if the cord is pulsating.

HEMORRHAGE is another complication, and it presents *three varieties, viz.: Ante partum, During labor, and Post partum.* We also have hemorrhage due to placenta previa. Ante partum includes any hemorrhage that occurs during pregnancy. Post partum, any hemorrhage occurring within one month after parturition. We shall speak of ante partum, and hemorrhage during labor, under the head of accidental hemorrhage, in contradistinction to "placenta previa," or "unavoidable hemorrhage," which is also in reality a hemorrhage during labor, but one requiring separate consideration. We shall, therefore, speak first of "Accidental hemorrhage;" secondly, of "placenta previa;" and thirdly, of post partum hemorrhage. (This latter is a sequel in labor, but most conveniently considered here with the other hemorrhages.)

Accidental hemorrhage is one that occurs during the last months of pregnancy or during labor. It occurs in about one case in a thousand. When it occurs we must be on our guard. *Its cause* is generally the placental separation which throws open the utero-placental vessels to a greater or less extent. The "show" is not to be regarded as a hemorrhage, nor do we generally include other very rare and small hemorrhages, such as rupture of the cervix or vagina, etc. Some blood—six or eight ounces—follows every natural delivery of the placenta. The uterine contractions then close the sinuses. Partial detachment cannot be overcome by this contraction, as the remaining attached portion acts as a splint and permits hemorrhage to continue. Blood flows from both surfaces of the detached portion. This separation of the placenta generally comes on suddenly, but the danger is slight when compared with placenta previa. The hemorrhage is apt to be profuse. This rupture of the utero-placental vessels is apt to be brought about by one of the following causes, viz.: a sudden blow or fall; uterine contraction from immense men-

tal emotion, as fear, etc.; sudden shocks or succussion of the uterus, as in laughing, coughing, etc.; dragging of the placenta from shortening of the cord, either absolutely or relatively; placental apoplexy occurring near its periphery. *The anatomy of the placenta:* When the foetal ball, surrounded by its tufted and shaggy chorion, enters the uterus, these tufts, or villi, penetrate the utricular follicles, and soon become vascular by the entrance of blood-vessels from the foetal body, and establish there a sanguineous relation between mother and child; the utricular follicles rapidly enlarging and surrounding the villi on all sides. At a later period the connection is destroyed, except in a certain portion, which increases and grows, and eventually becomes the placenta. This organ, when fully developed, consists of large pouches formed by dilatation of the vessels of the uterine mucous membrane, and derives its blood from the curving arteries of the uterus into which the foetal tufts dip by inverting (as it were) their walls. Now if the entire placenta be ripped off from the uterus, the uterine vessels supplying it are at once closed by the uterine fibres contracting and forming a ligature (so to speak) around the mouths. Now if part only of the placenta be detached, hemorrhage takes place, first from the placental surface, which has been lifted up—the blood entering at its attached, and pouring out at its detached, portion (surface). Secondly, from the open mouths of the uterine vessels, which the uterine fibres cannot ligature, as normally occurs, because the remaining attached portion of placenta acts as a splint.

Diagnosis. Accidental hemorrhage can usually be traced to some accident; it occurs but once. The hemorrhage remits with each contraction. The placental murmur aids in locating the placenta (to differentiate from placenta previa). We can also discover much by touch, sometimes. We are always warned by its causes. Uterine efforts are made to diminish the flow, and the hemorrhage is not so great as in placenta previa. The os is natural. (For differential diagnosis, see placenta previa.)

The prognosis, for the mother, is good, but for the child, bad, as it dies—in nineteen cases in twenty—from apnoea (due to deficient aeration in the uterine lung). This may occur, even if but little blood is lost. The woman rarely dies. In placenta previa, both woman and child usually die.

The treatment involves the same principles that are brought to bear in surgical hemorrhage. If the flow is slight, keep the woman quiet in bed, prevent all noise and mental exercise; her speaking must be prohibited, the room being kept cool, and ice applied over the abdomen, thighs, vagina, etc., (which produces reflex action, and contracts the uterus). Internally, we may use acidulated drinks, such as lemonade, etc.; also astringents, in full doses—gallic acid, matico, tannin, plumbi acetatis, opium, etc.; and if we do not succeed with these, we must use the *tampon*. This is applied in the vagina, and should only be applied when the uterus is full. The tampon must be carefully watched, as it is dangerous. Avoid the tampon, except in rare cases, and *after the seventh month* (as it will, otherwise, bring

on abortion), when we can freely use it, especially at term. If the woman has been bleeding for twelve hours, and the pulse is 140 and feeble, with the surface cold, and the bag of waters broken, the tampon would immediately bring on labor and exhaust the woman, or cause her death from profuse hemorrhage. But if the bag of waters is unbroken, the uterus is full, there is no more room for blood, and the tampon will now stop the flow.

The tampon acts in one of two ways: 1st, By preventing the escape of fluid, it causes accumulation in the cavity. It gets between (*i. e.*, the blood does,) the foetal envelopes of the foetal mass and the uterine walls, and distends, and at last dilates the os, which allows the uterus to expel the foetus, blood and tampon, altogether; or, 2d, When the uterus is non-dilatable, the blood poured out coagulates in the cavity. The coagulum begins to form at the os, and extends upwards toward the seat of hemorrhage, and then seals up the mouths of the bleeding vessels. (Labor is a result often to be desired, after the seventh month; the uterus being so large, after this period, that it may contain sufficient blood to cause death; so that, during the last months, its employment is always dangerous). After delivery, of course it should not be used. Hence, as a rule, we should not use the tampon, and only resort to it after mature consideration. *The Rules for Tamponing are:* Not to use it before the seventh month. After labor it is dangerous, for the uterus will contain much blood, and the woman may die of concealed hemorrhage. We may use it, after the seventh month, when the woman has strength and the bag is unbroken; feeble women would die from the loss of a little blood. Never use it at full term, if much blood has been lost. At full term do not employ it after the waters have come away, for the uterus would be able to contain too much blood. Never employ it from choice, when there is danger of internal hemorrhage. In a strong woman, who has not already lost a great deal of blood, in whom the uterus is contracting, and where the bag of waters has not broken, I should not hesitate to employ the tampon if other means failed, or if, from any reason, I deemed them applicable.

Version can be used to stop accidental hemorrhage, but its employment would probably kill the child. Pressure acts as a ball tied in the hand does—to check the bleeding from the palmar arch. Pressure is applied by rupturing the membranes, and thus bringing head to bear directly against the bleeding vessels, which almost invariably stops the hemorrhage. Stimulate the uterus to contraction (small doses of ergot may be given for this purpose). Few cases resist this, if pressure fails. The ligature (natural may be employed, by bringing on labor as soon as possible. Dilate with Barnes' dilators, and, if the head can be reached, deliver by the forceps. If the forceps cannot be applied, perform version, and deliver both child and placenta, and cause the uterus to contract completely to a small round ball.

RESUMÉ OF TREATMENT,

1st. *Cold, acid drinks, rest and quiet, and astringents.*

2d. *Tampon. Forms a clot in bleeding vessels.*

3d. *Version. (See under Ligature, above).*

4th. *Pressure. Evacuate waters, and give ergot.*

5th. *Ligature. Deliver, and cause to contract.*

Placenta previa, also termed *Unavoidable hemorrhage*. Ancient writers do not mention it. The name is applied to placenta attached anywhere below the centre of the body of the uterus, and it increases in danger and importance as it approaches the os internum. *Complete* when it covers the os internum. The extent of dangerous attachment may vary; thus, only the edge may touch on the forbidden ground, or the whole side of the lower segment of the body may be covered, or it may be attached to the circumference of the segment just above the cervix, *i. e.*, on a line around and above the os internum, thus hanging like a veil across the uterine canal, which it entirely seals up. The first two mentioned are "*partial*;" the latter is "*complete*," and causes great apprehension.

Cause. After the placenta is formed, it may be found attached to any part of the uterus from the fundus to the os internum. The normal attachment is to the upper half. The reason why it selects one point of attachment rather than another is unknown. Where the placenta arises from the fundus, the child may be expelled without its detachment; but if the placenta is attached over the os internum (so as to prevent dilatation for a time) of the canal through which the child must pass, when the canal *does* begin to dilate, it must detach the placenta to a greater or less degree, and hemorrhage to correspond flows from the torn utero-placental vessels. It is easy to see that such hemorrhage is "*unavoidable*." The placenta is never attached to the cervix or os internum. It could not get there, and would receive no nourishment if it did. The term cervical attachment I consider imaginary, and believe that the organ is attached in these cases to the segment of the uterus, just above the cervix, and perhaps entirely covering the os internum.

The source of the blood, it is maintained by some, is the placental vessels; and others think it is from the uterine vessels. When the placenta is placed over or near the os internum, the first uterine effort detaches a portion (generally small) and instantly a gush of blood takes place from both uterine and placental vessels; but sometimes firm tonic contractions occur, and the uterine vessels are ligatured by the uterine fibres. A slight flow still continues between the efforts of the uterus, as is seen by the examination of the placenta after expulsion. Clots soon form in the vascular mass and check the discharge. The next contraction separates more, and another set of vessels is broken across, and another gush of blood occurs. This, like the preceding one, soon ceases, but is shortly excited again by another uterine effort, and so on until the child is born, or, as more likely, until the patient (unless aided) dies from exhaustion and loss of blood. So long as the placenta remains in part attached over or near the cervix, these successive separations and hemorrhages occur, and nature is possessed of no means to obviate the continu-

ance of this dangerous condition. Nature either separates that portion of the placenta attached nearest the cervix, leaving that above still adherent, or by a powerful effort throws the placenta off entire into the cavity of the uterus or vagina, thus destroying the child's intra uterine lung.

Diagnosis. The premonitory symptoms are hemorrhage during the three or four weeks preceding labor—usually small and remitting. The cervix begins to dilate from the os upwards, and hence the hemorrhage is slight at first. During the last month of pregnancy the physician will be sent for hurriedly, and the woman will state that she lost blood without any assignable cause, such as blow, fall, etc. This hemorrhage will have already (or soon will have) ceased before his arrival, and he leaves her—his suspicions being aroused. In eight or ten days he will have another sudden call, the flow having occurred, perhaps during sleep, or when the patient was sitting quietly, and thus it continues to recur and remit until parturition. In other cases no flow occurs until parturition is going on, and the hemorrhage is then slight and continuous, and increases with each pain, becoming profuse. The flow before labor is due to the development of the inferior part of the uterus, which in the last months develops more rapidly than the placenta; while the flow during the labor is produced by the active dilatation of the cervical canal. Another premonitory sign is the situation of the placental murmur, low down. Vaginal touch shows one lip (placental lip) very much larger, this being due to increased nutrition from near placenta. We must explain to the patient the significance of these premonitory symptoms, to shield ourselves from censure. The signs during labor are hemorrhages—continuous in character and increasing with each uterine effort and becoming profuse, due to the gradual ripping off of the placenta. These hemorrhages are usually violent and rapid. The anterior lip (and also the posterior of os) are softened. By touch, we feel the placenta presenting. If, where the placenta is high up, we cannot reach by the finger, introduce the whole hand into the vagina, and pass one finger into the cervix. The first stage of labor is slow, as the os is prevented from dilating readily by the placenta. The placenta may be delivered before the child.

THE DIFFERENTIAL DIAGNOSIS BETWEEN ACCIDENTAL HEMORRHAGE AND PLACENTA PREVIA.

ACCIDENTAL HEMORRHAGE.

Hemorrhage will stop at each contraction, and return again when they cease.

Generally no ante partum hemorrhages.

Loss not profuse generally.

An evident cause will be found.

Placenta cannot be touched.

Cervix will be natural.

Placental murmur is loudest at the symphysis.

PLACENTA PREVIA.

The hemorrhage usually continues and increases with each contraction.

Generally two, three or more ante partum hemorrhages.

Loss often sudden and profuse.

No causes will be found.

Placenta may be touched on the edge.

Cervix thicker than normal.

Placental murmur is loudest in one iliac fossa.

The Prognosis, in cases of placenta previa, is of the greatest gravity. Thirty-three per cent. of the women die, and from fifty to seventy-five per cent of the children. Modern treatment will improve these statistics, which show a greater mortality than cholera or yellow fever. Death may be instantaneous. The very process by which nature attempts delivery destroys the mother and child.

The reasons for the mother's death are :

1st. *Hemorrhage* at the time of delivery, or post partum, from tearing away the placenta. This hemorrhage is unavoidable, because, for delivery, three conditions must be fulfilled:

1st. *The child must be expelled ;*

2d. *For this to occur, the cervix and lower segment of the uterus must dilate ;*

3d. *The placenta must therefore be detached.*

As each successive contraction dilates the cervical canal little by little, so does each tear off a small portion of placenta, and each detachment weakens the woman more and more, and injures the function of the placenta more and more, so that at last, in a period varying according to circumstances, the foetal heart ceases to beat, and the woman sinks into a collapse, from hemorrhage, and succumbs. How much loss of blood will destroy life we cannot of course determine, for what would kill a weak person would be borne by a robust constitution. It is not always that a woman dies from *repeated gushes of blood*, consequent upon successive detachments of disks of placenta, for a profuse and unexpected flow may occur *at once* and destroy life almost instantly, and this too from the detachment of a small portion of the placenta, yet it is *generally* from repeated flows of blood.

2d. *Inflammations. Metritis and Peritonitis* may occur from operative or other irritating causes, or from uterine phlebetis by extension of inflammation. In phlebetis, the blood vessels which form the uterine portion of the placenta are immensely enlarged, and these being bathed in the "lochia discharges," which in these cases are considerable, are very apt to take on phlebotic inflammation, a condition most perilous to life. *Septicæmia*, due to absorption of putrid matter, may also occur.

3d. *The Shock of Version* which is usually required, and is generally performed when the woman is in an exhausted state, and, moreover, the arm of the operator and the child are both drawn out through a hypertrophied cervix, tending to rupture it.

The reasons for the child's death are :

The blocking of the way through which the child must pass.

Asphyxia, caused by loss of blood, and inability to aerate its blood. The placental organ, being incapable of performing its function, does not furnish enough aerated blood to the foetus. It is separated from the mother's vessels, and cannot play the part of the intra-uterine lung. A small loss of blood may easily destroy the child, hence always make a guarded prognosis as regards the child.

Treatment. Nature's method may cause a favorable termination in five ways, viz.: 1. The presenting part of the child may be forced against the bleeding vessels, so as to close them by mechanical means, and labor may continue without further hemorrhage. 2. The labor may be so rapid that, in spite of the hemorrhage, the child may be delivered with safety to itself and its mother. 3. The sinuses may be sealed up by clots by rapid partial detachment. 4. The part of the placenta nearest the cervix is gradually detached, while that part adhering to the body is left in loco. The placental vessels are clogged in coagula, while those of the uterus are closed by contraction of its fibres, and hence the flow ceases, and no further detachment is requisite, and the labor proceeds without danger. This applies to cases of "partial" placenta previa. 5. The entire placenta may be driven out into the vagina by violent uterine contraction, when, as experience shows, the flow ceases. In the partial variety, the placental attachment is to one wall, and it may be torn off, and the hemorrhage cease from the pressure of the child's head. Nature's cases, left to themselves, vary very much, but, when unaided, the woman generally dies from hemorrhage and collapse.

Prophylaxis. Placenta previa produces no evil effects until three or four weeks before labor; then hemorrhage occurs, which, during the last month of pregnancy, so depreciates the woman, that she falls an easy prey to the profuse flow and the great exhaustion which occur during delivery. We could obviate this by bringing on premature labor. The dangers during the eighth month (*i. e.*, at eight months,) are known to be small, and, knowing the fatality when labor comes on at term, it is our duty to seriously consider premature delivery in grave cases, being careful that our diagnosis is correct, and that we fully understand the gravity of the case. Besides, we are at hand to treat complications that arise, and, if the case goes to full term, we may be out when called. We can accomplish delivery very rapidly. I always advise premature labor; many do not. I have had five cases, and treated by premature delivery, and all of the women. and three of the children, lived. The advantages of premature labor are: we should be dealing with a woman not exhausted by hemorrhage. The obstetrician would be present when the hemorrhage began. We diminish the risk of a suddenly fatal blow. Hydrostatic pressure may entirely prevent hemorrhage. The labor is rapid. It saves the woman from repeated hemorrhages. It has a little statistical result. Our means are a sponge tent, Barnes' dilators (their pressure prevents excessive hemorrhage), followed by other means (for which see Part I, page 19, et seq.).

During Labor. Our indications are to remove the element of danger, or to quell its activity, so that the cervix may be safely and slowly opened, and to control the hemorrhage in the interim; to hasten the child through as quickly as possible. The first indication may be fulfilled by the pressure of the child's head; by Barnes' partial placental detachment; hydrostatic pressure (Cohen's); partial placental detachment; complete placental detachment; tampon. These means are all used in the first stage. In the second stage the pres-

sure of the child's body is sufficient. The pressure of the head may be brought to bear by rupturing the membranes. This sometimes suffices, and if not, make use of hydrostatic pressure, by the use of Barnes' dilators, which combine two immense advantages: They actively dilate the cervix, and they check the hemorrhage while such dilatation is in progress. If the separation of the placenta be only "partial," pass a finger into the os, and separate that portion which you can reach without introducing the whole hand. Then introduce the smallest dilator, fill it with water, and wait. It will check the flow, either by pressure on the placenta, or as a tampon. In thirty or sixty minutes, if the woman is not exhausted, introduce the second-sized dilator, to be used in the same way; and, lastly, the largest dilator should be introduced. This will fully dilate the cervix, and if the uterine contractions are vigorous, the dilator may be removed; but, if they are feeble, retain the dilator until they become strong, or until they are excited by introducing a silver catheter between the uterus and the membranes, way up to the fundus. Upon their development and the removal of the dilator, the membranes should be ruptured in order that the presenting part may press upon the bleeding points, as the dilator did, and close the open vessels. The great danger is now past when the first stage of labor is fully ended, and if labor is rapid, or can be made so, both mother and child are comparatively safe. As the head passes into the os, all the features of the case are changed. For nature to accomplish the first stage (complete cervical dilatation), a profuse flow would have been inevitable and unavoidable. Should the presenting part appear when the os is fully dilated, all will go well; but, should it not appear, we may urge it on by ergot, catheterization, or we may resort to version or the forceps. Barnes' dilators are better than the tampon.

Barnes' partial placental detachment. In 1857, he recommended the practice of separating by the finger only that portion of the placenta attached near the cervix, leaving the part above still adherent. All the separation that must necessarily occur to permit the child to pass is thus accomplished at once; succeeding uterine efforts do not effect the parts left attached to the body, and tonic contractions of the uterine fibres close the open vessels of the uterus, while coagula do the same for the placenta. The labor may now progress without further hemorrhage.

Cohen's partial placental detachment consists in detaching the placenta from one wall of the uterus, and thus changing a complete into a partial case.

Simpson's complete placental detachment. The objection to this is that it certainly destroys the fœtus, but, when the woman is very much exhausted, we must resort to it. It certainly checks the hemorrhage. It is a *dernier ressort*. I introduce the hand into the uterus using anesthetics, and tear the entire placenta. We may then deliver the placenta, tie the fœtal end of the cord, and leave the child in utero (if the woman is too much exhausted to deliver it,) for a time, until she gains her strength in a measure. We must at the same time use beef tea, brandy, opium, and lower the head to pre-

vent syncope, and delay labor a week, if needed. The woman must be stimulated, and allowed to sleep, and be free from mental anxiety. In certain cases we shall be called upon to chose between version and Simpson's method (see Version below); utter exhaustion, danger of collapse, and the failure of dilators, call for it.

The means used to prevent hemorrhage while the os dilates are: Rupture of the bag, and allowing the head to press upon the bleeding vessels; hydrostatic pressure (Barnes' dilators); partial placental detachment (Barnes' or Cohen's); complete placental detachment (Simpson's).

The Tampon is one of our most precious methods of treatment. It may be tried when dilatation fails, and there is not enough room in the uterus to allow too much concealed hemorrhage. It acts by hydrostatic pressure as the dilators do (see page 45). It is a means always at hand.

Our indications to deliver rapidly may be accomplished by *Version, Forceps, Ergot, Craniotomy*. We should only attempt rapid delivery when the os is well dilated, and we should use some of the above mentioned means. When we should wish to deliver rapidly, we should rapidly dilate the os. The operation is called for to save the child, and sometimes to save the mother. When the uterus is entirely empty, hemorrhage is certain to cease. It can be practiced when means adopted for the first indication fail. (See above).

Version saves the life of the mother, and probably that of the child. If the whole of the os internum be covered by the placenta, pass up the hand, separate and deliver it by surging at the child's feet, and turning. It has been objected to on the ground that if the whole hand can be introduced for that procedure, version would be practicable; and this objection is not without reason.

In certain cases the finger would be sufficient to detach the placenta; and even if the whole hand was necessary, it would be much less dangerous to stretch a doubtful os for its admission to the wrist, than the introduction of the whole arm, and subsequent extraction of the child. Great judgment is required to decide when it is proper to perform version. If performed too soon, the unyielding os is lacerated, and there is great danger of post partum hemorrhage and phlebetis. If too long delayed, her forces are exhausted, and the shock of the operation may produce death. Some think version is called for by loss of blood attending placenta previa, and that its performance will render the parts yielding and dilatable. This is an error.

The circumstances that determine the choice between Simpson's Method and version, are as follows:—

Version is preferable. If the child is living ; If the labor is at full term ; When the patient's strength is good ; If the soft parts are dilatable ; When the pelvis is not deformed : In Multiparæ.

Simpson's Method is preferable. If the child is dead ; If the labor is before full term ; When the patient's strength is exhausted ; When great rigidity of the soft parts exists ; When the pelvis is deformed ; In primiparæ ; During puerperal fever.

The forceps may be used when the head is engaged and other means fail. It is not a very desirable means.

Ergot will aid in producing a rapid labor.

Craniotomy is advisable when the pelvis is deformed and other means inapplicable.

RECAPITULATION OF TREATMENT OF PLACENTA PREVIA.

Should the grave symptoms of placenta previa come on at the end of eight months, or the beginning of the ninth month, consider premature delivery.

Should the case be seen at the commencement of labor, practice Cohen's method if the implanta is complete, or Barnes' method if it is partial, following these means by dilators. Having dilated the os, rupture the bag, and excite, if necessary, the uterine contractions by ergot; catheter before removing the dilator. Should the hemorrhage be profuse, deliver at once by version and forceps.

Should the os be dilated, or dilatable, and the woman exhausted, spend no time in experimenting with dilators, and do not expose her to the danger of an operation, but practice Simpson's method, and rally her strength by food, stimulants, opium and sleep. Should the dilators not be at hand, use the tampon or colpurgater instead.

Post partum hemorrhage is prevented in the normal condition by the contracting fibres of the uterus. It is probably only a sequel of labor, but is more conveniently considered with the other hemorrhages. Almost always three or four ounces of blood pass away from women, after labor. Sometimes blood may pass for a week. Coagulation sometimes checks the hemorrhages, and a small hemorrhage need give us no anxiety. If occurring within twenty-four hours of labor, post partum hemorrhage is termed "immediate;" if later than this, "remote." Another division is "open," when it flows externally. Women are in danger from post partum hemorrhage any time within a month after labor.

Its pathology is the non-closure of the uterine sinuses, and the non-formation of coagula. The causes of post partum hemorrhages are: Atony of the uterine fibres, as a predisposing cause; too rapid delivery, as an exciting cause; the obstetrician's non-performance of the third stage of labor; blocking of the vagina with towels, by the nurse; retention of the placenta, which acts as a tampon after its detachment:

The symptoms that lead to suspicion are: The patient draws a long breath and calls for more air, and an examination should be made immediately; lips are pale, and the woman feels faint; pulse flickering, and very rapid—140 to 160. If the hemorrhage is "open," the blood flows from the vagina, and if concealed, the uterus will be found to be enlarged upon feeling of it.

The Treatment for its prevention consists in never pulling out the fetus when not necessary, and practicing "expressio fecti" in the second stage; in giving ergot after delivery; and always see that the third stage is completed before leaving, and apply the child to the breast at the end of an hour.

The curative treatment is: to irritate the uterus with the hand; cold applications; deliver the placenta, if it is retained; turn out clots, and irritate to contraction by the administration of ergot, etc. Always empty the uterus with clots. Entering the uterus with the hand generally causes its permanent contraction. Suppose you have been absent from the house two hours, and you return and find a profuse hemorrhage? Now what are you to do? If asked what rule I would fix upon your minds in every case of post partum hemorrhage, I would answer: Empty the uterus, and cause its complete contraction by any means that suggest themselves. You may be too late, but always empty, and depend on nothing else to stop the hemorrhage. Grasp the womb and press out its contents, and this, to your surprise will often arrest the flow. If this fails, put your hand into the uterus and remove whatever you may find there, and never trust to cold, etc., in these cases. Sometimes you may have the placenta entire, and the uterus contracted, and yet have hemorrhage. This may be due to pseudo placenta (a little false, secondary placenta); so always put your hand into the uterus. After removing whatever you may find in utero, give a full dose of ergot, and then rub ice over the fundus, and keep your hand constantly on the uterus until it has contracted. If it will not contract, then, with the other hand, take a piece of ice, and pass it up the vagina into the uterus, and rub it all over the surface, and even leave it in the cavity, as I have often done. When you are called to see a patient, you will find her sitting. Now, will you first empty the uterus? No; but you will raise the windows, put her in bed—removing all pillows—and raise the foot of the bed, and then proceed to empty the uterus. You have seen this patient just at death's door, and what is to be done must be done rapidly and at once. Ergot will not here answer, but your hand and the ice must save her, if she is to be saved at all. If the hemorrhage is not immediately stopped, you may find your patient dead. I would pour ice-water all over the fundus, into the vagina, etc., and give her ergot to keep up the contraction which other means have produced. I do not believe in the use of astringents, as the salts of iron, etc., as Dr. Barnes recommends, yet a sponge might be saturated, and the internal surface of the uterus sponged with them. They do little or no good. Sometimes you will find the woman pulseless from having lost so much blood, in which case you must utilize what blood remains, by raising the foot of the bed and lowering the head, thus giving all the blood possible to the brain and heart. Next bandage the limbs, and you will perhaps retain the *one ounce* of blood needed to save life. Then have an attendant to hold up her arms, and thus save a little more blood for the brain. Can you utilize the blood in any other way? I know of no other means. Now you must sustain the nervous system, and opium is our sheet anchor. Use this:—

R

Spts. Vini Gallici, ℥ j.
Tinct. Opii, ℥ ij. M.

S. A teaspoonful every half hour.

Lastly. We may practice *transfusion*, which is not difficult, but depends for its success in defibrinizing the blood, *non-admission of air, good instruments, etc.*

Puerperal Convulsions occur in one case in 485. A convulsion is a violent, irregular, involuntary contraction of the muscles, and is ordinarily under the control of the will. *There are two varieties, the Tonic and Clonic.*

The *Tonic* convulsions are characterized by lengthy and continuous muscular contractions, as in *Tetanus*.

The *Clonic* convulsions are characterized by remissions, as in *Epilepsy*.

Puerperal convulsions are generally epileptiform in character, and there are three varieties of these, viz.: 1. Those in which the seizures are general, but in which no loss of consciousness results, as in *hysteria chirea* (called hysterical puerperal convulsions). 2. Those in which the attack resembles epilepsy in some aspects, but not in others, and which prevent their being treated synonymously, and which are called epileptiform convulsions. The third variety differs from this last mentioned in not occurring without assignable cause, and not being habitual.

The causes are numerous, and will be considered under different heads, as follows:

Urincemia, whether from urea-ammonia or other morbid product, we know not.

Blood poisoning from bile, or some of its constituents; *Specific poisons*, as lead, narcotics, etc.; *Disordered cerebral circulation*, as from congestion, anæmia, etc.

Reflex irritation, or eccentric, as from dentition, crude ingesta, etc. (I have never seen such a case.)

Concentric irritation, as meningitis, pressure on brain.

Hydræmia predisposes to convulsions.

Any one of these causes is sufficient, in the non-pregnant state, to produce epileptiform convulsions; and, existing in small degree, they would likewise do so in pregnant state, when the woman's system is very much excited, and reflex influence more than ordinarily acute. Decidedly the greatest cause is *Urincemia*.

The Pathology of Urincemia. It is probable that as the pregnant uterus rises in the abdomen, it exerts an injurious pressure on the renal veins, and so produces venous congestion of the kidneys, and interferes with their eliminative functions. This causes a discharge of albumen in the urine, and an accumulation of some of the elements of the urine in the blood. The poisonous principle retained is by some thought to be urea; others think the urea is decomposed and carbonate of ammonia is formed.

M. Triest's theory is that decomposition does not occur in the blood, but that carbonate of ammonia forms on the surface of the mucous membrane of the intestines, and is gradually absorbed. This is confirmed by the fact that carbonate of ammonia is found in the intestines of animals, from which the kidneys have been removed. There is some other agency besides urinæmia at work to cause puerperal convulsions, for we do not find that other

tumors and fluid accumulations produce the same derangement, although the same amount of pressure may be brought to bear on the renal veins. It is probably the peculiar blood state of pregnancy. The blood is hydræmic, and not richer, as some suppose. The changes in the blood are a diminution of density, an increase of its watery elements, great decrease of globules, slight increase of fibrin, diminution in the amount of albumen and serum. Convulsions are most common in primiparæ (two-thirds the cases), as the abdominal walls are rigid, and are especially frequent among those who lace tight to conceal illegitimate children. Convulsions do not occur in every case of urinæmia; they are merely more likely to occur in such cases. Statistics prove that one-fourth of those suffering from urinæmia are attacked.

I divide cases of urinæmia into slight, which very seldom produce convulsions; *medium*, which are very suspicious; and *grave*, which are almost assuredly followed by convulsions, and for which I bring on premature delivery. Convulsions being due generally to urinæmia was a discovery of Simpson's and Feirit's, in 1843.

The Symptoms. Just before the attack there may be premonitory symptoms, such as increased desire to sleep, increased irritability, forgetfulness, despondency, puffiness under the eyes, gradually the œdema becomes general, irritation about the solar plexus, epigastric uneasiness, or anxiety, with a sense of sinking, persistent headache, hallucinations, impaired vision, vertigo, tinnitus-aurium, deafness, stertorous breathing during sleep, possibly vomiting, urine somewhat scanty, albumen in the urine. Study the symptoms of urinæmia in the male, and you will find them identical in the female; not so in the attack, however. In the beginning your attention will be drawn to the patient by a turning over in the eyeball, leaving only the white of the eye visible. Then the inferior maxilla will be drawn to one side. Lips are puckered so as to completely cover the teeth, and the head is turned on the neck, the occiput being drawn toward the spine. The flexor muscles of the arm act powerfully, flexing the fingers, and bringing the forearm down on the chest. All the contractions occur in rapid succession, and for a while the convulsions may appear tonic in character, but soon the arms jerk violently, the head is moved rapidly in the neck, and the jaws open and close with great force, and a deathly pallor or lividness overspreads the face. Froth, more or less tinged with blood, oozes from the violet-colored lips, and the woman now begins to take full, stertorous inspirations, and the seizure passes off. The patient now falls asleep exhausted, but after awhile will awake, and look confusedly at her alarmed attendants, and perhaps in a half-conscious manner ask what has happened. This attack, after an indefinite time, will be succeeded by another, and, after two or three have occurred, consciousness is generally abolished; and even in the intervals, a stertorous breathing, together with a semi-comatose condition, lasts from fit to fit. The number of these that may happen before the case ends, the frequency, and their severity, depend upon circumstances. We must make a differential diagnosis from hysteria, epilepsy and apoplexy. Hysteria is recognized by a partial consciousness during the attack;

also, by its length, duration and slight intensity, and by general hysterical behavior and temperament. Epilepsy would be recognized from the patient's having had former and repeated attacks, and other symptoms of epilepsy, and by the urine being normal. Apoplexy is so very rare that it need not concern us. I have seen one case—the convulsion was not marked.

The prognosis is, that twenty-five to thirty-three per cent. will die. Twenty-five per cent. have died in my practice. One-half of the children die. *The causes of the mother's death are:* exhaustion; apoplexy from forcible rupture of the cerebral vessels, in which case recovery is rare; asphyxia, due to spasm of the muscles of the glottis, and respiration; inter-cranial and pulmonary serous effusion, the result of transudation through the walls of the distended capillaries; coma, due to cerebral congestion; paralysis of the heart from muscular spasm, which produces instant death. Apoplexy does not produce death so soon.

The causes of the child's death are: convulsions—may kill the child, as well as the mother; asphyxia, which is due to cedema of the placenta, or violent contraction of the mother's muscles during a convulsion. The placenta being compressed, and supplying poisonous blood to the fœtus, soon kills it. Even if the child is born alive, its chances for life are not good, for many infants thus circumstanced die within twenty-four hours.

Treatment. When we know how to treat these cases thoroughly, they will not occur as often as one in four hundred and eighty-five. Make it a rule to examine the urine as often as once in ten days, for the last two months before parturition, in every case of labor you have, and you may thus prevent many cases of convulsions. Do this especially, if suspicious symptoms come on; particularly if cedema of the face or feet appears. Always do it as a means of diagnosis, in puerperal disorders, and if you find albumen, or tube casts, or renal epithelium, watch, and adopt preventive treatment. When these are found, there need not by any means be convulsions, even without preventive treatment. In slight cases, stop tight-lacing by corsets, and give Potass. bitart. (℥ j. a day) to keep up a gentle catharsis; limit the animal food to easily-digested meats; give light, nutritious diet; order open-air exercise, with an avoidance of late hours, heated rooms, exciting companions, and stimulating drinks; keep the skin active by baths, perspiration, friction, and proper clothing. The medium cases we manage in the same way. *In grave cases,* I always advise premature delivery at eight months. The symptoms of urinæmia then disappear, and the child has a better (almost certain) chance to live. We may put the woman under chloroform, and deliver, unless there is a strong objection. Maternal and fetal life may both be saved by the induction of labor at the eighth month. The kidneys being crippled, press other means into service to eliminate urine, such as saline cathartics (and if she cannot swallow, use croton oil); hot and vapor baths; dilute citric or benzoic acid, or benzoate of ammonia. Sometimes, in convulsions occurring post partum, opium is found very useful, but should be used with caution. We must have perfect quiet and silence, and

absence of light. When we see convulsions coming on, chloroform or morphia, hypodermically, are very efficient. When the woman is in convulsions, treat by obstructing the avenues to death, which are apoplexy, asphyxia, serous effusions, coma, exhaustion, paralysis of the heart. To do this, we give chloroform, which should be given very freely. Dread the convulsions more than the drug, and keep her asleep with it until we can do something more for her. This eliminates or neutralizes the poison. Ether, from the excitement it produces, is not applicable. If serious injury has occurred, as apoplexy or serous effusion, chloroform is of no use. To be of service it should be resorted to early, and to obtain the full results of anæsthesia, it must be kept up twenty-four or forty-eight hours, by which time the danger is generally passed. Anæsthesia need not always be complete, and when we withdraw the chloroform we may, if desirable, continue with hydrate of chloral in gr. xx doses, repeated, but we must be careful of its effects. Keep her under its influence until danger is passed. Next to this we may use morphia, hypodermically. Our second indication is to diminish the vascular turgescence and excessive action (of the heart), and thus remove the liability of apoplexy or coma. Our means of doing this are two: the lancet is inferior to chloroform; is more unreliable and dangerous, yet it is a precious means at our command, and should be used, unless there are some serious contra-indications. We should, especially, employ it if anæsthesia fails. Do not bleed because the patient has puerperal convulsions, but because there is some special indication, such as plethora or too violent vascular action. You may find a state of serous plethora. The indications for bleeding are two, viz.: to alter the state of the blood, and to diminish the mass that is pouring through the vessels. In puerperal convulsions, if bleeding does any good at all, it does so by fulfilling the second indication at the expense of the blood's chemical state. You may be asked to bleed, to relieve vascular turgescence and exalted heart's action. Our third indication is delivery. Empty the uterus, if possible, as experience teaches that in the majority of cases the seizures will be less when we remove the pressure from the kidneys. The indications to empty the uterus are: If the os has begun to dilate, encourage and hasten labor as soon as the convulsions are at all controlled. Should the woman not be at term, endeavor to arrange the case without the induction of labor, regarding it as a *dernier ressort*, but adopting it when all other means fail to check the returning seizures. If you decide to bring on labor, do it in this way: Pass a sponge tent into the os uteri, and then apply the warm douche freely against the encircling fibres of the os; follow this by Barnes' dilators, and stimulate pains by catheterization, or else deliver by version or forceps. Sometimes the bag may be ruptured with advantage. When the head gets within reach of the forceps, it is my impression that it is best to deliver rapidly, for every moment's delay adds to the danger. Our fourth indication is to keep up the action of the skin, etc., and we must make both bowels and skin act as above mentioned.

SYNOPSIS OF TREATMENT.

Bring the patient fully under the influence of chloroform.

Bleed if there is any indication for it. If labor has just begun, hasten it ; but if not, endeavor to avoid the necessity of inducing it. If we cannot avoid it, do not hesitate too long about its accomplishment.

Act freely on the bowels and skin ; apply cold to the head, and give lemonade freely if the patient can swallow.

Remember that the prolonged use of chloroform is not nearly as likely to produce death, as a return of convulsions.

RUPTURE OF THE UTERUS.

This generally occurs at the cervix, where the vagina is attached, but it may happen at the fundus. It may occur during pregnancy from abortion, or a sudden blow. It occurs in one case in 600 ; mostly in the lower walks of life, where hygiene is neglected.

The causes of rupture of the uterus are, predisposing and exciting.

The predisposing are fatty degeneration of the uterine fibres, mostly seen in the intemperate, and those living under unfavorable hygienic surroundings, bad air, etc.; anything which weakens the uterine fibres ; the uterine walls may grow thin, sometimes, though rarely, from congenital predisposition ; the previous performance of Cæsarean section, or previous rupture, the union not having been perfect ; over-distension from any cause ; multiparity, etc. Metritis not a common cause, as it is usually traumatic.

The exciting causes, are: Any sudden blow ; the use of ergot ; obstruction to delivery ; introduction of the hand into the diseased uterus ; obstetrical operation (version most commonly) ; too early application of the forceps ; attrition of the uterus against a sharp linea ilio pectinea may cut through its walls.

The symptoms. The patient cries aloud and clasps the abdomen. She feels that something has broken, and may hear the noise made by the rent. There is a free flow of blood from the vagina, and a recession from the presenting part. The patient collapses ; the pulse rises to 160, and is very feeble. There is a fixed pain somewhere in the abdomen, and tenderness. On placing the hand upon the abdomen, even may feel the child instead of the uterus. By the side of the child the hard contracted uterus may be felt, or the child may be felt partly within and partly without the uterus. When the rupture is slight, and the presenting part has not come well down, the symptoms are not well marked.

The prognosis is very unfavorable ; recovery being very rare.

The treatment. There are no premonitory symptoms. (The treatment differs according to whether the child is in utero, or in perfect collapse). Deliver at once by version, if possible, as we may drag the child out, even if it has partially passed into the abdomen. If the woman is in a perfect collapse we must not operate until this state passes off. Strong stimulants should be given until she rallies. If the child is entirely without the uterus we must resort to gastrotomy, Do not wait to procure instruments, but use even a

pocket knife and darning needle. It is better to do this than to introduce the hand through the rent, and draw the child back through the uterus, for in so doing we may produce intestinal hernia, which will be strangulated. Moreover, by gastrotomy we may easily remove the child, and cleanse out the peritoneal cavity of liquor amnii, etc. The forceps can only be used where only one limb of the child has passed through the rent and where the head has not receded.

The dangers of rupture of the uterus are: Hemorrhage, peritonitis, collapse, septicaemia, hernia of intestines. When any of these arise, they should be treated on general principles. Keep the woman profoundly under opium to prevent peritonitis.

Inversion is a very rare occurrence. *Its varieties* are "*Partial*" and "*Complete*." When it is "*partial*," the body of the uterus attempts to expel itself, and we may mistake this for a polypus.

"*Complete*" explains itself.

The great predisposing cause is the non-performance of the third stage of labor.

The exciting causes are: Any sudden effort of the uterus; pulling upon the cord; sudden delivery, etc.

Symptoms. Pulse rapid and feeble; some hemorrhage, etc. The uterus may be felt in the vagina inside out, and firmly contracted in some cases; in which case palpation discovers no uterus in its normal situation, and a ring where it passes through the cervix. By touch we can usually make it out without difficulty.

Prognosis. As it has been a careless obstetrician that allowed it to occur, the woman is in bad hands, and the prognosis is therefore doubtful. It is dangerous under any circumstances. The woman may die of hemorrhage or collapse.

Treatment. Perform faithfully the third stage of labor in every case, and inversion is not liable to occur. Do not deliver the placenta until the uterus is contracting. When the uterus is totally inverted, do not cut it off for a polypus, as I have known to have been done. Our treatment is not to rip off the placenta, which would produce a fatal hemorrhage, but push back the uterus and placenta into the normal position, and then bring on uterine contraction by cold irritation, etc. If inversion is partial, introduce the hand and reduce it. If we cannot do this, Dr. Dewees advises production of complete inversion, which is more easily reduced.

RETAINED PLACENTA.

When the placenta is not delivered soon after the child, we speak of it as *retained*.

The conditions which favor "retention" are atony of the uterus, irregular uterine contractions, adherent placenta, from placentitis.

Prognosis. There is danger of endometritis, septicaemia and remote hemorrhage, and the friends should be fully informed. It may give rise to puerperal fever.

The Treatment. It may be delivered by stimulating the uterus to

contraction by appropriate means, and pulling on the cord in the axis of the pelvis. Traction on the cord must be slight, and we must see that the uterus follows the placenta down, by pressing firmly on it. The placenta should be unbuttoned, as we do a coat button, from the cervix. We may thus apply a great deal of force, which should be gradual and gentle. I always adopt these means, and have failed only three times. We now give ergot, in addition, in full doses (\mathfrak{Z} ij to \mathfrak{Z} iv) to aid us. If the placenta is "adherent," we may have hour-glass contraction from the use of ergot. If the above means fail, we are called upon to operate, always give anæsthesia, and placing the woman in obstetric position. Give the patient to understand that it is a serious complication, and no ordinary case. Introduce the hand into the uterus, and if there be hour-glass contraction, go through it; if the placenta be adherent, tear it off, being careful not to go through the uterine wall. If the adhesion is too strong, we may be forced to leave a portion, for fear that we may tear the uterus with it; this exposes the woman to the danger of septicæmia. After the operation, perform complete uterine contraction.

SYNCOPE.

Fatal syncope sometimes occurs as a complication of labor. We have already referred to it at sufficient length to understand its danger.

The Treatment is on ordinary principles.

END OF COMPLICATIONS OF LABOR.



SECTION FOURTH.

SEQUELÆ OF LABOR.

RETAINED PLACENTA.

POST PARTUM HEMORRHAGE.

PUERPERAL MANIA AND FEVER.

PHLEGMASIA DOLENS.

MAMMITIS.

SURGICAL DISEASES.

Retained Placenta and *Post Partum Hemorrhage* we have already discussed. *Phlegmasia Dolens* we have no notes on, and *Surgical Diseases* are treated of at length in Prof. Thomas' "*Diseases of Women.*"

PUERPERAL MANIA is an obscure disease. It generally occurs as a sequel of labor, and within six days after it; but it may occur as a complication, or even during pregnancy.

Its varieties are:—*Hysterical, Melancholia and True Mania.*

Hysterical Mania generally occurs during parturition, and soon subsides, and is mostly seen in hysterical women.

Melancholia may begin with pregnancy, and disappear during parturition, or it may occur post partum, in which case it generally lasts. The woman is quiet and says nothing.

True Mania. In this the woman is violent, and she may become a maniac for life.

The predisposing causes are:—

Hysterical diathesis. The state of the nervous system due to pregnancy (why, we cannot conjecture). Alcohol and fright produce kindred conditions. I have one patient who presents slight mania every pregnancy; (it may be from hereditary tendency) *Leucocythæmia*, the blood state of pregnancy. *Urinæmia*. You will often find renal casts, etc., in the urine, and other signs of urinæmia, which you must differentiate from meningitis.

Epidemic Influences. Some epidemics tend to produce puerperal fever, and in such we often find more than a usual proportion of cases of mania. We cannot explain this influence. (I have seen five cases in six weeks, probably due to this cause).

The exciting causes are:—

Nervous exhaustion caused by long labor; starvation after confinement, causing chlorosis; sudden disappointment, fright; or mental anxiety about the child, which keeps her awake by crying, etc., and creates a want of sleep; loss of blood, overlactation, etc.

Acute Inflammation in any part of the body, as mammitis, cellulitis, meningitis, pericarditis, abscess, etc. The exciting causes will not act unless the predisposition is present.

Of the pathology very little is known, some thinking that it consists in blood poisoning, such as septicæmia, urinæmia, etc. The urinæmia theory is plausible, and seems to have been proved as one cause. Others think it a purely nervous disease, due to some changes in the nervous system; others ascribe it to phrenitis.

The symptoms are generally obscure. In mild cases the patient loses her vivacity, is recluse and silent, soon appears melancholy, and wanders off alone, and shows ordinary signs of insanity. Her appetite is unimpaired, her breath peculiar, her pulse slow, her skin cold. She gradually falls in the condition of melancholia or true mania. Generally this begins on the fourth day after delivery, and we find the woman becomes irascible, suspects people, accusing them of poisoning her, beating her, etc.; has a full pulse, hot skin, dry tongue, and presents the ordinary signs of delirious insanity; this condition is to be distinguished from meningitis. Her looks are wild and unsettled, voice peculiar (she cannot modulate it). She is apt to make you her confidant, and abuses her husband or nurse (do not be taken in by this) and says they poison her food, etc. She may suspect you of doing something to her. She does not trust her best friends; has an aversion to her child, and must be watched or she will kill it. She does not lose her reason completely, but does her self control. She has a great tendency to use obscene or wicked language, though she admits it to be wrong—her conversation is sometimes vile, and this occurs with the most refined women.

She is sometimes obstinate, and will not answer questions, or eat. This may go on until she becomes violent, raging and dangerous;—her pulse rapidly rising, and she may die in an attack. She will sometimes say that she knows she is insane.

Prognosis is, according to Churchill, a question of time. It may last one hour, though this is very rare, to six months; or, it may become permanent. In most cases the prognosis is good. Where there are physical symptoms, such as urinæmia, and the pulse is above, 100, the prognosis is bad. If there is only melancholia, recovery is the rule. She may remain insane, but is not likely to die. Mild cases generally recover entirely. Puerperal mania kills by exhaustion—the patient refusing to eat, and typhoid symptoms set in. Death may occur from suicide or from exhaustion through violence.

Treatment. Do not lose your influence over the patient, if you can help it. We may prevent some dangers by avoiding urinæmia. Keep the patient well nourished during the hours following parturition. Allow no loss of blood. Avoid influences that produce blood-poisoning. When women cannot sleep after confinement, give opium and remove the crying child. In melancholia our treatment must be nominal, aided by a change of scene and surroundings. If, in spite of this, true mania develops, we must treat thus: If the mania is violent, apply the “strait jacket,” and let her be watched; darken the room; remove the child; have two strange nurses to watch, the one by day, the other by night. Keep her family away from her (insist on this), and procure her as much sleep as possible (by Potass Brom., \mathfrak{z} i. doses administered every eight hours). Allow her all the milk she will take—she will not eat, but, being very thirsty, she will drink milk, not knowing it from water, and we can thus keep her nourished. Open her bowels. Try to get her asleep with chloroform, and then give opium to keep up the narcosis (Morph. Sulph. M. xv. hypodermically). Hydrate of chloral is less certain. As a general rule I dislike opiates. Avoid moving her to an asylum, if possible, as the idea clings to her for life. Keep her at home and let strangers watch her.

PUERPERAL FEVER. This disease is peculiarly characteristic of puerperal women. Others may have a disease similar in all respects and the symptoms as well marked, without having been pregnant; but we cannot term such cases true puerperal fever. This is not the only fever that may occur post partum, as we may have typhus, pyæmia, simple traumatic peritonitis, pneumonitis, milk fever, remittent, intermittent, or, more often, puerperal and uterine cellulitis.

The varieties of puerperal fever are:—*Sporadic, Epidemic, Adynamic, and inflammatory.*

The *Sporadic variety* is not contagious, as is *Epidemic*, which equals *Hospital Gangrene*, in this respect; or typhus or erysipelas, whose poisons are almost identical in their properties with that of puerperal fever.

The *Adynamic* is a low fever, due to blood-poisoning.

Inflammatory is, really, simple acute peritonitis, from extension of inflammation.

The predisposing and exciting causes:—

After every labor, women's nervous system is in a condition very susceptible to injurious impressions—i. e., greater hyperæsthesia than normal. The blood is hydræmic, poor in fibrin, and hence very susceptible to blood poisons. Scarlatina, varioloid, typhus, and such diseases, are very much more fatal immediately after labor than at other times. The same is true of erysipelas, and all septic diseases. Another predisposing cause is the presence of lochia, which consists of blood, a large amount of serum, debris of blood clots, shreds of placenta, decidua, fœtal envelopes, etc.; this is always fetid, and may continue some time. The internal surface of the uterus is left raw, and ready to absorb any offending material. Its mucous membrane begins to be regenerated at the end of the first week, and by the end of the sixth week, the lochia have entirely disappeared, and the uterus has assumed its normal condition. This dying mucous membrane being exposed to the air, becomes septic, and may cause septicæmia. The influence of contagious material may set up an inflammation in the uterus, and thus induce puerperal fever which would not occur in a healthy person.

Post mortem examinations may also cause the physician to communicate a septic material (to his patient) which may result in an inflammation (septic endometritis) in a puerperal woman. There are two special causes:—Any accident giving rise to blood poisoning, as embolism; septicæmia or phlebitis, in any part of the body, may cause sporadic puerperal fever, in puerperal women. A peculiar aerial condition affecting the mucous membrane of the uterus may cause epidemic puerperal fever.

RESUMÉ OF CAUSES.

The predisposing are:—

Peculiar nervous state of pregnancy; Blood state (Hydræmia); Presence of Lochia; Raw condition of the uterus; The peculiar condition of the uterine vessels (the arteries enlarged and the veins become sinuses).

The Exciting causes are:—

Contagion; Material from physician's hand, after autopsies; Absorption of Lochia; Any septic material introduced from without the uterus

The special causes are:—

Blood-poisons from other parts of the body; Epidemic influences.

We embrace under puerperal fever, several varieties of inflammations, which occur singly or variously combined, due to a septic influence, and each one of them giving rise to a somewhat analogous condition, which we know as puerperal fever. We shall treat of each separately, and what we say of one is in some degree applicable to the others.

These varieties are:

Septic or Puerperal Endometritis; Uterine Lymphangitis, or Angioleucitis; Suppurative phlebitis; Septicæmia (from duct absorption of septic material); Peritonitis. Puerperal generally follows any of the foregoing.

Puerperal endometritis is much more fatal than the idiopathic variety, owing to the state of the blood, the nervous system, and the exciting causes, to which a puerperal woman is subject. Poisonous elements are easily absorbed by the mucous membrane after labor. The hands of the obstetrician may introduce a dangerous poison into the uterus, when he has made post-mortem examinations, or has upon his hands any matter derived from gangrene or any septic case he may be treating. The poisons of the specific fevers may produce puerperal endometritis.

The obstetrician is liable to carry the disease from one to another. Epidemic influences (a peculiar aerial condition) cause it. Tedious labor, followed by an operation, may produce it. Delivery of a retained placenta by hand, is another cause. Any introduction of the hand into the uterus may cause it, such cases being called sporadic.

The Pathology. *Endometritis* may be limited, or may extend by continuity to the veins, causing phlebitis, or phlegmasia dolens; to the lymphatics, producing angioleucitis; to the peritoneum, producing peritonitis. All of these may exist together.

The diagnosis. It may be developed at any time during the first puerperal month. Generally it occurs before the ninth day. There is a slight chill or a very decided pain in the uterine region, tenderness, heat in the vagina, pulse 120–130, thirst, face anxious, occasionally delirium, temperature 104°–106°, vomiting of pure bile in bad cases (“green paint vomit”), with gastric juice and blood. Symptoms of peritonitis supervene in most cases. We can only differentiate endometritis in its early stages from septicæmia, phlebitis, etc.

The prognosis is unfavorable, in most cases, be guarded in giving an opinion.

Prophylaxis. See that the third stage of labor is faithfully performed, and the uterus kept contracted. Never expose the patient to the contagions spoken of, and above all, keep the atmosphere pure and warm (70°). Remove all excrements from the room. Inquire into the nurse’s former situation, and if it is objectionable do not employ her. If epidemic fever prevails, send the woman into the country. Keep her clean. Do not perform Version, or an operation requiring the introduction of the hand into the uterus, if an epidemic fever prevails.

Treatment. Quiet the nervous system with opium. The woman will be much depressed in spirits, and opium relieves this feeling. Use disinfectants; clean out the uterus with water and carbolic acid (gr. xvi to ℥ j). We can taste the acid when the proportion to that of water is correct. Inject with a syringe, slowly and gradually; or we may use Ferri persulph. These remedies strike at the root of the disease; they also afford a marked relief; in every case I have seen, their effects have been excellent. Repeat the injection at the end of a few hours. Counter-irritation seems to do no good, and I always proscribe blisters. Opium should be given only in doses large enough to relieve pain and quiet the nerves. We may quiet the heart’s violent action with sedatives. Veratrum, watched care-

fully; and the bowels should be left to *their own resources*. Quinine is only beneficial as a tonic later in the disease. Opium and injections are the only appropriate treatment for the local condition.

Angioleucitis. This arises from an extension of inflammation, or may be direct in its origin. It runs obscurely into peritonitis, and death ensues. We may suspect its existence.

Phlebitis. The *symptoms* resembles those of pyæmia (which it really is). Death is invariable.

The *treatment* is tonic and stimulating: quinia, opium, good diet, etc.

Septicæmia. The *symptoms* are adynamic, and consist of chills, sweats; the breath continuing sweet. It is rapidly fatal. We may perhaps stop its extension by injections into the uterus, quinia, etc.

Puerperal peritonitis. This inflammation originates from endometritis, by an extension of inflammation, or from salpingitis, or the secretions of the tubes, or the regurgitation of septic material, or angioleucitis, extending from the lymphatics of the uterus to those of the peritoneum or any serous membrane. Serous membranes are mostly composed of lymphatics. Septicæmia is often associated in such cases, and when it is diagnosed we should look for peritonitis, though its occurrence is rare.

Lastly, peritonitis may occur, as a primary condition (*i. e., per se*), though it, as a general rule, supervenes upon one or more of the above-mentioned conditions, and closes the scene in puerperal fever in most cases. Peritonitis, *per se*, is most likely produced by a rent in the peritoneum, at the point of its uterine attachment.

Its pathology. Active congestion first occurs, and may be limited in its seat, but generally spreads rapidly. In the second stage, serum or lymph is effused, and the inflammation runs its usual course. The patient dies in an algid condition, retaining consciousness to the last. Death is probably due to paralysis of the numerous ganglionic nerves; the organs and viscus remaining in about their normal condition.

The *diagnosis* is made easily by the *symptoms*. Generally, a violent chill; rapid pulse, wiry and small in character; tenderness, usually beginning in the pelvic region. Tympanitis becoming marked, being caused by a stoppage of intestinal peristalsis, from paralysis of the muscular coat of the intestines. Gas accumulating to such an extent as to impede respiration by inducing paralysis of the diaphragm and compressing the lungs. Vomiting of bile occurs in the later stages. The hands are shriveled and cold. When the algid condition comes on, the *prognosis is fatal*. The woman converses to the very last, and is not cognizant that death is near. Death may occur in coma. The disease may be confounded with violent colic, endometritis, or pelvic cellulitis. *Prognosis.* Is always bad; worse than in septicæmia or endometritis. Always predict that it is very treacherous, but do not say fatal, to the friends, as recovery may take place.

The *treatment*. The same prophylaxis should be practiced as in endometritis (*q. v.*). The immediate treatment is as follows: perfect rest (keep the patient perfectly still, on her back); evacuations

are to be removed by the catheter and bed pan (never use cathartics); keep the patient semi-narcotized with opium, thus checking pain, and quieting the nervous system. This drug is our sheet-anchor, and we must watch it well to get its proper effects. It enables the patient to bear pain, and thus gives a chance for recovery, but it is not a specific; the dose is not fixed, but should be large enough to produce semi-narcosis and reduce the respiration to 10-12.

Its action should be continued until the danger is past. If the pulse is rapid, *veratrum viridi* may be used, or aconite. No counter-irritation or venesection; though in very sthenic cases I have applied leeches over pelvic cavity, with good results, in cases of primary peritonitis. The complications of puerperal fever are; pelvic cellulitis (the adynamic form is not usually accompanied by this), inflammation in various organs, such as pneumonitis, pleuritis, sub-acute meningitis, etc.: phlebitis, giving rise to abscess in the lungs, liver, brain, spleen, areolar tissue, etc.

The symptoms of adynamic puerperal fever are distinct chill or shivering, followed by fever, with the pulse feeble, compressible and rapid; profuse sweating (hydrosis); breath sweet, tongue dry and dark; muttering delirium, subsultus tendinum; algidity, coma, typhoid symptoms; generally with death as a termination.

The symptoms of inflammatory puerperal fever are ushered in by a distinct chill; pulse is full and bounding (130; perhaps more); skin hot and dry, the face wears an acrid expression; vomiting of the contents of the stomach; acrid bile, with local symptoms those of inflammation in general.

MAMMITIS.

Synonyms:—*Gathered Breasts, Broken Breasts, Mammary Abscess, Mastitis, Inflammation of the Mammary Glands.*

Anatomy. The gland is made up of lactiferous ducts, which begin at the nipple and are ten to twenty in number. They run back to receive at the ampullæ many smaller ducts, which divide and subdivide and finally end in lobules, which are arranged together to form lobes. Each lactiferous duct is surrounded by a sphincter muscle, which may by spasmodic action prevent the flow of milk, or from paralysis permit its continual flow.

The lobules are held together by loose areolar tissue, which is very abundant in the negro, and allows the breast to hang far down. This areolar tissue is similar to that seen in the lung, and is really the parenchyma of the gland. It also acts as a suspensory ligament to hold up the gland. The sub-mammary areolar tissue is peculiarly arranged, and is called by Velpeau, synovial membrane or bursa of the mammary gland. Blood-vessels and nerves run between the lobules and the substance of the suspensory ligament,

This disease is a sequel of labor, that the woman much dreads, and for the occurrence of which she generally thinks the physician to blame. At the end of the first month of pregnancy, sympathy begins to be manifested by the mammary glands, the flow of blood to them increases, pigment is deposited, a thin liquid is secreted, etc., until labor comes on. On the third day after labor the gland becomes

actively congested, and a free flow of milk begins. The glands become turgid, and from the end of the third day to the end of the first month, mammitis may occur. Up to the third day the child needs no artificial nourishment, it is supplied up to this time by a gelatinous secretion in its stomach, and what little it gets from sucking the breasts. If we have to use any artificial food, let it be sugar and water; on the third day after labor the woman may have a chill, slight fever, congested breasts, etc., constituting what is known as milk fever (vide page 31). Should these normal bounds be overstepped, mammitis is developing. *There are two varieties of mammitis, viz.: Catarrhal and cellular.*

Catarrhal mammitis begins in one of two ways; as an inflammation of the ducts, and spreads back to the lobules, and from this condition it may proceed to cellular mammitis; or, it may be secondary to acute and rapid congestion on the third day after delivery, by which process the milk is locked up.

Cellular mammitis begins as an inflammation of the areolar tissue, and almost invariably leads to abscess. The two varieties are not always separate in their existence. *Catarrhal Mammitis is caused* by cracked nipple (see below). Sudden checking of the function of the skin from air draughts, excessive lactation, etc. Acute and rapid congestion, with failure of milk to escape, may end in this form.

The diagnosis requires us to discriminate this disease from sub-mammary abscess, which is deep down and beneath the deep layer of superficial fascia which passes beneath the gland. Only a portion of the gland is inflamed, and not the whole of it, as in physiological congestion. It begins as a nodule, which is almost sure to form an abscess, or a catarrh of the milk ducts, and I believe mammitis may begin in the parenchyma (constituting in this latter case the cellular variety). The inflammation may begin in the tube, and, if properly treated, no abscess may result, but the duct will in all likelihood be obliterated. Milk sometimes collects to the amount of three pints, and is erroneously termed "milk abscess." There is no abscess so long as the milk is confined to the tubes; but if it is extravasated, an abscess soon forms, faster in strumous women than in others. If not treated, pus will burrow in all directions, and amputation may be required to save the woman's life. Generally, however, pus is evacuated, and the abscess contracts and heals. One abscess usually leads to another. The stages are congestive; inflammatory (with effusion of lymph); suppuration (which always occurs in cellular mammitis).

Symptoms of inflammation of the ducts are: Violent chill, pain in the course of the milk ducts, secretion checked, glands engorged with milk and blood. We have a nodule which is slightly tender on pressure, and red at first, and which soon enlarges. If its cause is congestion with milk, both breasts will be enlarged all over; if from inflammation, they will be hard and tense.

Prognosis is always good if treated by the means we shall lay down as "prophylactic" and "immediate."

Treatment. Prophylactic. Never give a cathartic to the woman until the third day after labor; but at that time we may give a mild one, and allow a little animal food (mostly), as liquid increases the mammary congestion. We may prevent pathological congestion by rubbing the breasts with oil, so as to prevent their being irritated by friction. This should be done once in two hours; rub gently from the base towards the nipple, thus squeezing the milk from the lobules; a slight diarrhoea may be kept up. Cold and hot applications I do not advise. If this treatment will not suffice, we may paint the nipple and areola with Tinct. Bella., which must be employed with caution, or it may check the secretion entirely; or, give Iodidi potass. gr. x. every eight hours, which is not so likely to check the secretion, but it is less efficacious than Tinct. Bella. Be careful not to poison the child with belladonna. The breasts should be washed after the application, before the child is applied.

The immediate treatment necessitates that the cause be ascertained. Should the cause be cracked nipple, protect the nipple by a glass shield, made for that purpose. Beeswax may be used, if the shield is unattainable, or the child may suck from "Haggerty's Nipple Shield," which prevents any irritation of the nipple until it is healed, To cure the fissure we may apply

Prescriptions for Sore Nipples:—

R Paint them with Tinct. Iodine, or Argenti Nitras.

R Tannin, 1 part. Glycerine, 3 parts. Or,

R Atropiæ, gr. iij.
Morphia Sulph., gr. iv.
Glycer., 3 j.
Ungt. Glycerhizæ, 3 iv. M. Or,

R Pulv. Acaciæ, 3 ss.
Sodæ Bitart., gr. x.
Tinct. Myrrhæ, 3 j. M. Or,

R Ext. Belladon., 3 ij.
Glycerine, 3 ss.
Aq. Rosæ, 3 ss. M. Ft. lotio. Or,

R Lin. Saponis Comp., 3 iij.
Ext. Belladon., 3 j. M. Or,

R Atropiæ Sulph., gr. ss. Inject hypodermically.

If there is congestion from milk, we may prevent true or "cellular" mammitis by stopping the flow of blood to the breast, and lessen the duty of the breast.

To stop the flow of blood to the breasts:—

Cut off all fluids, especially warm ones. This also lessens the secretion of milk. Let her have food moderately, but only enough to satisfy the cravings. Empty the bowels with a hydra-

gogue, and allow the breasts to rest as much as possible. To empty the breasts, you must counteract all the sphincteric action of the ducts by belladonna, made up to the consistence of cream or molasses, and rubbed in and around the areola. This done, the child or breast pump may be applied, and, in case these cannot be used, the nurse may use her hand cautiously and gently. To lessen the duty of the breasts, remove the child, especially if "excessive lactation" is the cause of the trouble we are treating, and employ a wet nurse or artificial food to nourish it. If exposure to cold was the cause, apply warm fomentations and sudorifics, which generally suffice — such as pediluvia, hot baths, Dover powders, etc. If inflammation begins in the milk duct, and becomes lobular; it is an absolute inflammation of the mucous membrane. Apply belladonna; cut off all fluids, and apply a hydragogue cathartic. Apply warmth to allay inflammation, and promote diaphoresis by an oil silk jacket. Do not cause enough warmth to cause suppuration. In a few hours the inflammation is much allayed. If the heart beats violently, and the pulse is high, with a throbbing sensation in the gland, give *veratrum viridi*.

Cellular Mammitis is an inflammation of the cellular tissue of the mamma. It commonly follows other forms, but may be primary. We can rarely prevent the formation of abscess. *Its causes are: Depreciated blood state; Injuries—from blow of child's head, for instance; Pressure from tight clothing; Rough handling by the nurse in trying to bring on milk.* She should rub gently from the base of the gland towards the nipple, and never pull or squeeze the gland.

The diagnosis. It begins as a nodule, which is almost sure to suppurate. We can prevent the formation of sinuses, however; the nodules grow rapidly and may become the size of one's fist in a day. The other symptoms are present, as in the catarrhal variety; only they are somewhat more marked.

Prognosis is that an abscess is almost sure to form under the best treatment.

The treatment. If a phlegmon occurs in a strong woman, from an injury, we may try to get rid of it. To do this cut off all fluids: apply belladonna; give a hydragogue; support the breast with a sling (handkerchief); apply four or five leeches over the spot; lead and opium wash; cold, (ice bladder), low diet, solid, rather than fluid; light catharsis continued. The pain quieted by opiates; bind down the part with compressed sponge, with a roller bandage and then wet it, and it will exert equal pressure upon the gland. We may use *Iod. Potass*, in small doses to promote absorption. Should these means fail, we may then hasten its suppuration by hot poultices covered with oil silk, changing them frequently to prevent their becoming cold. Fluctuation will soon be present, and the abscess will point in a little red spot; do not operate too early, yet it must not be allowed to break after the structure is broken down, lest a fistula should form and continue unhealed for many months. As soon as the abscess has fully formed, operate; use local anaesthesia; be careful about blood-vessels, which are now greatly enlarged; never cut until you *know there is pus, and where it is.*

Examine with a hypodermic syringe, and if in this way we find pus, follow down the syringe as a guide, with the knife; inject any sinuses that are discovered, with warm water, and keep the pus thoroughly cleaned out; water injected may contain a little carbolic acid or iodine. Six or eight hard spots may form in succession, and these may become new abscesses of fistulæ, which constitutes a grave condition. To know the existence of these tubes, pass a probe, or failing in this, inject an infusion of cochineal, which shows them by its color; when we have washed out the sinuses, strap the breast to bring the walls of the fistulæ together. Failing in this, strengthen the injection, and support the patient with tonics, iron, nutritious food, as the system is always poorly in these cases where sinuses form. Keep the child away from the breasts, especially if there are inter-lobular abscesses, containing pus; compress sponge may be conveniently prepared, by taking ordinary sponge and soaking it in glycerine and then compressing between boards by means of heavy weights. It is soon ready for use.

END OF SEQUELÆ OF LABOR.

PART THIRD.

OBSTETRIC OPERATIONS.

SECTION FIRST.

VERSION.

This operation may be necessary, for the following reasons:—

To correct malpresentations of any variety, but especially transverse.

To relieve convulsions where other means fail, and it is necessary to deliver rapidly. (Pelvic version usually being the operation in these cases.)

In rupture of the uterus, to save the mother. (The child dies in these cases.)

In placenta previa.

In bad cases of prolapse of funis.

To hasten labor for any reason.

Version should not be performed in powerless labor, it being dangerous and almost impossible. It can only be performed in the early stage of labor.

Forceps are more useful in the later stages; we generally employ version when we cannot reach the head with forceps, which are less dangerous. Hence, version is not a means of election. The varieties of version are *Cephalic* and *Podalic*, divided as follows:—

CEPHALIC, { *External,*
 { *Bi-manual,*
 { *Internal.*

PODALIC, { *External,*
 { *Bi-manual,*
 { *Internal.*

External Version, either *cephalic* or *Podalic*, possesses the advantage of always being safe and not disturbing the nervous system. It should always be attempted, as we do no harm if we fail and much good if successful.

This operation was discovered in this century, by Wiegand. In fat women it is almost impracticable, and is much easier in thin women. We can perform it only when the liquor amnii is present, or has not been evacuated more than an hour. If we are *not* in haste we bring down the head, and if we *are* in haste we bring down the feet (*i. e.*, breech). When convulsions come on, or there is danger of uterine rupture or hemorrhage, and we are called upon to perform version, we should always try external before resorting to internal version. Even if the woman is flooding, perform external version if possible, until the breech is down, when you may pass up the hand and seize the feet, and deliver as speedily as possible. Putting the hand into the uterus may cause post partum inflammation. If the child cannot be turned by external means, try another variety of version. It is advisable to try external version when we wish to deliver rapidly, even though the head be presenting normally. If external means are not soon efficient, do not wait too long, but resort to internal before it becomes too difficult. When the bags are ruptured, external version is not practicable. The *performance* of external version is as follows:—

Relax all clothing, and uncover the abdomen completely. Act between the contractions of the uterus. Put one hand on the breech and the other on the head, and sweep the head down while you push the breech up at the same time, or *vice versa*. When the child is thus turned, prop it up in position by compresses and bandages until the presenting part engages in the superior strait. Do not employ anaesthetics.

Bi-manual Version is more dangerous than the last, ranking in danger between it and internal version. It is, however, generally safe. (This remark applies to either cephalic or pelvic version).

It is applicable to the same cases as external version, when that fails, and it should be tried before resorting to internal version. Three hands are required for its accomplishment. It is a good means of turning when the waters are present, but very likely to fail when they are absent. Do not always try when the waters are absent. To perform bi-manual version we may or may not use anaesthetics, this being a matter of choice. Place the woman in obstetrical position and pass one hand into the vagina, and two fingers into the uterus as far as the child's shoulder, and push the shoulder up at the same time that you push up the breech, with one hand on the abdomen; the head soon comes within reach, and you seize it, being assisted by a third hand pushing from without; pull it down and leave the case to nature. If the bag be intact, rupture it now, and keep the finger upon the head until it is fully engaged in the superior strait. If you wish to bring down the breech, reverse the above mentioned proceeding. If the child be drawn down into the pelvis, you cannot employ either external or bi-manual version. You might employ internal podalic version, but it is dangerous, and hence we allow nature to pursue her course.

Internal Cephalic Version is an old method of practice, since the sixteenth century. Internal cephalic is safest, but is not so efficient as internal podalic. Its advantages are, that it removes danger from both mother and child. We should always try it before resorting to internal podalic, for if we fail, we have done no harm, and can easily change to internal podalic without withdrawing the hand, and if we succeed we shall have a natural labor to deal with.

Internal cephalic version is performed under anæsthesia. Evacuate the bladder with a catheter, and rectum with an enema; protect the carpet; bare the arm and grease it thoroughly, except the palm of the hand, thus facilitating the introduction, and guarding against the introduction of poison. Place the woman in obstetric position; the assistants on chairs at each side, with their backs to the patient's head to hold her thighs apart. Know the presentation and position *thoroughly*. Act slowly and coolly, and always turn with the hand that would naturally shake hands with the child. If the left hand of the child presents, use the left hand to turn; but if the right hand of the child presents, use the right hand. Suppose the head presses down in one iliac fossa, and arm presents, in each case try to push back the arm. If you can, well and good; but too often you cannot; then introduce the hand, and push the shoulder up, and with the other hand outside, push the breech up, then seize the head with the hand in utero, and bring it down. Internal cephalic version is generally quite easy, or else impossible; and if we fail in it, without withdrawing the hand, we can immediately resort to

Internal Podalic Version. The advantages of which are, that it almost always succeeds. The reason for this success is that we can use the child's body as a tractive point, and the foetal wedge is better placed for passing through the pelvis.

The reasons for performing internal podalic version, even though the head presents, are: those spoken of under version in general, especially convulsions, hemorrhage, immediate danger of any kind, prolapsus funis, rupture of the uterus, deformed pelvis. When the head will not come down in other cases, you may try the breech, because the bi-parietal diameter is very large, but the bi-mastoid is very small; or by this means you may deliver the women of a live child, otherwise craniotomy may be called for.

The performance of internal podalic version demands the same preparation as just described for internal cephalic version. Always examine with the *left* hand, and we may go right on to the operation (as it is the left hand that is oftenest required), without withdrawing the hand. Introduce the hand in the form of a cone, pushing it up between the pains until it rests on the child's abdomen, keeping the arms at the same time well down into the vagina, and feeling for the pulsating of the cord. Introduce that hand that passes most easily over the face of the child. When a pain comes on, keep the hand still, or you may rupture the uterus. If the bag be present, plunge into it, hastily seize the knee and turn. Plunge into the bag at its bottom, and do not go between the bag and the uterus, as this procedure endangers the uterine mucous membrane. If the os is undilated, we are forced to dilate it by the means already spoken of.

Our hand may be caught between the head and the superior strait, unless we keep the head well pushed up by the thorax eminence while the fingers seize the knee. If we seize the foot, its extension may rupture the uterus, and besides, we have to go further up to reach it. Always seize the knee of the leg, which is the opposite to the presenting arm (*i. e.*, the right knee, if the left arm presents, and *vice versa*). The object of this precaution is to throw the chin into the hollow of the sacrum, instead of under the symphysis, by rolling the child over in the operation of turning. Draw down one limb and leave the other, thus leaving a little valley for the cord to lie in. We take less time and we have a larger plug to dilate the vagina for the passage of the head. Keep the hand still during the uterine effort, to prevent its being paralyzed, and uterine rupture (as before mentioned). When we have seized the part, wait for uterine contraction, and the moment it passes away, begin to turn so that the operation may be completed before another uterine effort occurs. The turn is performed by pulling down with one hand and pushing up with the other. When the leg is born, wait for a contraction, and when it comes on bring down the child with all your power, and manage now as in breech presentation. If there is no need of haste, when the case has assumed the character of breech presentation, let nature accomplish the remainder of her deliver at her leisure. If we cannot turn with one hand, draw down one leg, and fasten it with a towel (held by the other hand), and then re-introduce the hand and push with all your force on the head, holding on to the leg fastened with the towel. If every other means fail, we must resort to embryotomy. We can perform version when the antero-posterior diameter is between two and a half ($2\frac{1}{2}$) and three (3) inches.

FORCEPS.

The forceps constitute our simplest and safest obstetrical operation, but it is not *always a safe one*. They save more lives probably than any other surgical instrument. Their discovery is due to Dr. Chamberlain of England, who kept the secret in his family for a hundred years; they were used by him straight; the pelvic curve was given to them by Smellie and Twiët in 1830 to 1840. They should never be applied to any part except the head.

The pelvis must measure at least three inches. We may apply them within the cervix, and when the os is not fully dilated. It is then preferable to craniotomy, which is our *dernier ressort*.

There are innumerable varieties of forceps. The long forceps to be preferred are either "Elliot's" or "Ritgen's;" of the short "Davidson's." I advise you to own two pairs of forceps, but if limited to one pair, the long are to be preferred. I always use short forceps when they will answer my purpose. The objection to Hodge's forceps is the lock. I recommend Elliot's as being the best of all. Dr. Ritgen of Germany invented a pair with a graduated lock, which allows them to be shortened or lengthened at will, and they are excellent.

The indications for the use of Forceps are:—

To change the position; to overcome obstruction; to hasten de-

livery; to produce traction; to aid some stage in the mechanism of labor which the uterus is unable to perform.

The uses of the Forceps at the bedside are :

In powerless labor; when the labor is arrested by the occiput, in the hollow of the sacrum; in deformity of the Pelvis; when there is prolapse of funis; in rupture of the uterus; in violent hemorrhage; in puerperal syncope; in puerperal convulsions.

The conditions which must exist before forceps are applied are :

The os externum should be fully dilated; the child's head must be within reach of the forceps; the head must be in the strait before they are used; they should never be used when the head is movable above the superior strait.

The dangers of their use to the mother are :—

Tearing the soft parts. You may forget the axis of the uterus (pelvis) and lacerate the vagina, rectum, or bladder.

Fistulæ result from prolonged labor, and not from the use of the forceps.

The cervix uteri may be torn in introducing them.

The vagina, or rectum, may be torn through, creating a fistula.

The perineum may be ruptured.

There is little or no danger in putting forceps inside the os, if you can go to work scientifically and carefully.

The dangers to the child are :—

Compression (to avoid this, relax the forceps occasionally).

Cutting through some of the soft parts.

We are often called upon to save the child's life when it is jeopardized from any cause.

FORCEPS OPERATIONS.

Rotation and Extension may be accomplished by the forceps, where labor is retarded. They act as tractors, then as rotators. Some say that they also act as compressors, but we must remember that the fetal head can only stand one-third of an inch in compression, and this space is taken up by the blades of the forceps in the pelvis. You should never use them as compressors, for in shortening one diameter you lengthen another. Never tell the woman you are going to use instruments. Give anæsthesia. Evacuate the bladder and rectum, and place the patient in the obstetric position. Decide between the use of long and short forceps. If you can touch the ear with two fingers, use the short ones; otherwise, use the long ones. Next, diagnose the position, and, if you cannot do this, wait until you can, or call a consultation. Supposing you know the position, and that rotation has taken place, how shall you act? Oil the backs of your hands and the blades of the forceps; seize the head in the most convenient position—generally over the ears—and always introduce the blade of the forceps first that you think will be the most difficult to introduce, leaving two fingers up in contact with the ear, and sliding the blade along them into their place. If the hand is an obstruction, withdraw it. Always introduce the blade in the axis of the superior strait, and, having fixed it, carry the handle down, and let an assistant hold it. Then insert the second

blade in the same way, and now lock the handles, being careful not to include any hair or soft parts. Having adjusted the instrument, wait for a uterine pain, and feel for a contraction, with a hand on the abdomen. When it comes, hold the forceps in the right hand, and with one finger on the lock, and the index finger on the child's head. Then draw down in the axis of the superior strait, slightly rotating the child's head. As soon as the occiput is delivered, wait for another pain, and when it comes, draw firmly down in the axis of the inferior strait until the forehead is well down in the perineum. Then pass two fingers into the rectum, and feel for the bulge of the child's nose or mouth; as soon as either of these parts can be felt, remove the forceps. Put the finger in the child's mouth and deliver the head, and leave the rest to nature. If the head comes down with its long diameter in coincidence with the oblique diameter of the pelvis, one blade of the forceps will be down in the perineum, while the other is in the right or left acetabulum. In such cases act as before, performing more rotation. If we cannot reach the ear of the child, we must use the long forceps. These are more difficult to introduce, as there are two curves to remember. On examination, you will find that the long diameter of the head is almost never in coincidence with the long diameter of the pelvis. Occiput is always at left acetabulum, or to sacro synchondrosis. The same rule applies here as before. If occiput is at the right sacro iliac synchondrosis, and immovable, you will have to introduce the forceps upside down, for you must turn the occiput anteriorly. Great force and care are required here. If the head is at the superior strait, and if, in applying forceps, we have to press upon the abdomen without reference to the head, it makes no difference to the head, or in the face presentation; but if it is a breech presentation, and all but the head is born, throw the child's body over the abdomen, and apply the short forceps.

CRANIOTOMY.

Craniotomy is performed when the head of the child presents. When the pelvis is from two to two-and-a-half inches, antero-posteriorly, version cannot be performed, and this operation is called for.

Recollect that no living child can pass through a pelvis less than two inches in diameter. If the pelvis is less than two inches, we must perform Cæsarian section.

The reasons this operation is called for are: Hydro-cephalic head; large bony tumor in the pelvis. Unusually large head may come down and catch on the superior strait, and neither traction nor forceps being of any avail, and the child generally being dead, we resort to craniotomy. If forceps, even, can deliver a still-born child, it is better than craniotomy. Deformity of the pelvis—diameter being from two to two and a half inches.

The steps of the operation are: 1st, Perforation of the skull, and churning up the brain; 2d, Application of the crotchet; 3d, Delivery.

The operation is performed under anæsthesia, the patient being placed in the obstetric position. The bladder and rectum are evacuated. Two fingers are introduced to guard Smellie's scissors, which are used to make a crucial incision, and enter the brain through the parietal bone and churn up the cranial contents. The bone is difficult to penetrate, but it may be overcome by care, using a little force. In order that the opening may not close, and leave things just as they were previous to the puncture, go through the bone and not through the fontanelles or sutures, and make a large opening by turning the instrument back and forth. I prefer Smellie's scissors, with Bachelor's modification or trephine perforator, or my own (Thomas') instrument. Having entered the brain, destroy it thoroughly—especially reach the medulla oblongata, or the child may be born alive, and present a horror to bystanders. Wash out the brain with a Davidson's syringe. We now have a chance to compress, and we can proceed to the second step, viz., Introduce a crotchet, guarded by two fingers. Unless care is used, this instrument will slip, and may then tear the mother's parts fearfully. We must grasp it firmly with the thumb, and guard its edge with two fingers.

We now proceed to the third stage, viz., Delivery. Having firmly fastened the crotchet in the head, employ traction, and when the head has come down low enough, wind a towel round the neck and finish the operation. Another means of making traction is by the craniotomy forceps, which are not as good, however, as pieces of bone may come away with them, and cut the mother's parts. It is better to combine craniotomy with cephalotripsy, or cranioclasm, or both.

CEPHALOTRIPSY

is performed by entering and churning up the brain, as in craniotomy, and evacuating the contents. Then introduce the cephalotripe, screw it up, and *dash* the head flat; then deliver, observing the curves of the pelvis, as in delivery by forceps.

CRANIOCLASM.

The cranioclasm is introduced after the brain is cleaned out (as in craniotomy), one blade within and one without; the skull and bones are broken to pieces by a rocking motion. Delivery is then accomplished by any means applicable.

CRANIOTOMY, CEPHALOTRIPSY AND CRANIOCLASM COMBINED.

To destroy the head I operate as follows:

- 1st. *Perforate the head by a trephine.*
- 2d. *Break up the brain, with its cylinder.*
- 3d. *Through the cylinder inject water by a Davidson's syringe, and wash out the brain.*
- 4th. *Break bones by cranioclasm at two long extremities (thus aiding compression.)*
- 5th. *Compress the head, and withdraw by a cephalotripe.*

EMBRYOTOMY.

Also termed *Embryulcia* and *Evisceration*.

This operation consists of the destruction of the whole or part of the fœtus, in cases where, from disease or other cause, it cannot be delivered entire. An enlarged liver or other tumor, monsters, very large children, etc., are conditions which demand this operation. If the child is enlarged from ascites, emphysema, or like affections, we should treat as laid down under "Deformity," page 38.

The performance is as follows: Do not employ Ramsbotham's method (cutting off the neck and head); it delivers the body, but leaves the head to roll around in the uterus, making it impossible for us to get it again in some cases. Cæsarean section has even been required to get the head out when this mode of operation had been followed.

In general we should act as follows: Get an arm down, and hold it, and introduce Smellie's scissors through the axilla, and eviscerate the thorax; then deliver the chest, and if the head sticks perform craniotomy by going through the palate bones or eyesocket. If the breech present we may have to cut off the legs, by sawing with whipcord. Perforate the anus, and churn up the abdomen, and then proceed as above. If the head comes first, and an enlarged chest prevents delivery, or an enlarged abdomen, we may reverse the above proceeding, entering the chest from above, and then entering the abdomen through the diaphragm; this is a dangerous operation, and very disgusting to bystanders. We may employ any of the above means for delivering the head, if necessary (*i. e.*, craniotomy, cranioclasm, cephalotripsy). We operate on the same principles in any presentation. The woman should be prepared for the operation, and should be managed according to principles already mentioned. Be careful to do no injury by your instruments. The contents of cavities are removed by injection, as in craniotomy, after they have been churned up. This operation destroys the child, of course, but is much less dangerous to the mother than Cæsarean section, and besides it is often required in the class of cases in which the child could not live by any care of the attending physician. We therefore feel justified in performing embryotomy rather than expose the mother to the risks of Cæsarean section, and thus delivering a worthless child.

CÆSAREAN SECTION.

This consists in delivering the child by cutting through the walls of the abdomen and uterus, and delivering the child in this way. It was known before the Pentateuch was written, and was practiced by Greeks and Romans on dead women. It was first performed on living women, A. D. 1491. It ought not to be considered a sacrificial offering, for we resort to it before trying, and failing in, other operations, and early in labor. More than 50 per cent. recover. Statistics say 75 per cent.

The objects are to hasten delivery, and to deliver the child, which cannot pass *per vias naturales*.

The causes requiring this operation are :

1st. *Deformity of the pelvis*—when the pelvis is less than two inches in diameter. The danger of craniotomy to the mother is almost as great as Cæsarean section, there being so little space that the mother's parts are terribly torn, and violent fever and inflammation may result ; and more than this, by Cæsarean section the child is saved.

2d. *Obstructed labor demands it*—in very rare cases.

3d. *Rupture of the uterus*—when the child has escaped into the abdominal cavity entirely.

4th. *Death of the mother.* When a woman dies, from any cause, with a live child in utero, we should cut it out immediately, or even after many hours have elapsed, as some wonderful cases of delivery of live children from dead women are on record.

5th. *Extra uterine fœtation.* This operation is now generally abandoned for this cause. (See p. 13—Treatment, etc.)

6th. *A large cancer of cervix.* In some cases of this affection we cannot get the child through, nor even operate per vaginam.

The dangers to the mother are :

1st. *Hæmorrhage.* This is great, and if we should cut through the site of the placenta; or it may come from the abdominal walls. We cannot generally locate the placenta, and cannot, therefore, know whether we shall cut into it or not. By the stethoscope we may succeed in locating it, however.

2d. *Metritis and Peritonitis* may result.

3d. *Septicæmia.* This we generally avoid.

4th. *Collapse.*

5th. *Other rare dangers.* A great majority of the recorded deaths result from a too protracted labor—even powerless labor coming on before the operation is performed. We deduce from statistics that seventy-five per cent. of the women operated upon recover; still, when labor has lasted very long, and the woman is exhausted, there is no hope in the operation. In craniotomy eighty per cent. recover, and in this operation seventy-five per cent.; therefore, the five per cent. in favor of craniotomy is certainly balanced by the life of the child being saved in Cæsarian section. If the uterus ruptures, and the child is entirely in the abdomen, we must operate. If only partially out of the uterus, version or forceps may be tried.

The dangers to the child are very slight.

If we can start with a living child, it is apt to be born alive, but we often wait too long. It may be killed by cutting through the placenta, or when the child is being withdrawn through the opening in utero, a sudden contraction may catch its head and neck, and destroy its life. The operation, of course, is preferable to craniotomy, for the child's interest.

The steps of the operation are :—

1st. *Cutting through the abdomen and uterus.*

2d. *Removing the child and placenta.*

3d. *Closing the wounds.*

The operation of Cæsarean section requires a warm room, and that warm water should be at hand to warm the instruments. A full dose of opium should be given, and she may be under opium

for four days before the operation, to reduce the danger of peritonitis. Never operate until the woman is in labor, if it can be avoided, as the uterus will, otherwise, not remain contracted. We can bring on labor by catheterization. Remove the feces and urine, and give anæsthetics. Five assistants are required, and everything should be arranged previously to the commencement of the operation.

Then begin by making the external incision, using an ordinary scalpel, having one assistant to keep back the intestines. The incision should be made through the linea alba, directly over the fundus, and should be about five or six inches long—large enough to allow the child to escape. Cut carefully down until you reach the peritoneum. Slit this upon a dissector, so as not to injure the intestines. Having thus cut through the abdominal wall, push the intestines aside, and expose the uterus. Now mark the situation of the placenta by the stethoscope, to prevent cutting into it. Next, cut gently through the uterine wall, wakening the incision long enough for the child to escape through—three to four inches. Having done this, we must plunge the hand into the bag, grasp the fœtus, and drag it out rapidly, so that no contraction will catch it. As soon as the child is delivered, hand it to an assistant, and then rapidly deliver the placenta. If this cannot be done, push it back, and force the cord down through the os, so that it can be delivered *per visas naturales*. Then wash out the uterus with water and carbolic acid; throw ergot into the rectum, in order to irritate the uterus to contraction. We may, if necessary, close the uterine incision by metal sutures, but they may not be necessary, as contraction generally closes it completely. We can leave the peritoneum open long enough to do this, without the danger being increased. We must pass through the whole thickness of the uterine wall, introducing sutures one-fourth of an inch from the edge of the wound, placing them about half an inch apart. These sutures need never be removed, as they do no harm. When the uterus is sewed up, cleanse the peritoneum *thoroughly*, and as rapidly as is consistent with due care. Do this with sponges and tepid water, containing a little carbolic acid. When this is done, close the external wound by passing silver sutures half an inch from the edge, and through the entire abdominal wall (including peritoneum). Sew up the entire wound, except a small opening at the bottom, through which pass a small tube of hard rubber to the bottom of the peritoneal cavity, through which we can inject substances to clean out the cavity and prevent septicæmia. The after-treatment consists in covering the wound with carded wool and a bandage, which is all that is necessary. Keep the patient perfectly quiet by opium, to prevent peritonitis. If septicæmia comes on, inject the peritoneal cavity with carbolic-acid water, through the rubber tube, using two quarts, if necessary. The effect of this washing-out is wonderful—the patient improves in two hours. Watch carefully for hemorrhage, and, if it occurs, open the wound and tie the bleeding vessel, or cause firm contraction of the uterus, as in all likelihood it is relaxed. Always see that the uterus is firmly contracted. The danger of peritonitis is generally passed on or about the fourth day; and of septicæmia, about the ninth day.

